FOOD SAFETY: HOMEMAKERS' ATTITUDES AND PRACTICES

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FOOD SAFETY: HOMEMAKERS' ATTITUDES AND PRACTICES, by Judith Lea Jones and Jon P. Weimer, National Economic Analysis Division, Economic Research Service, U.S. Department of Agriculture. Agricultural Economic Report No. 360.

ABSTRACT

Homemakers' knowledge, attitudes, and practices regarding food safety topics were explored in a nationwide survey conducted in 1974 by the Economic Research Service, U.S. Department of Agriculture. The study focuses on homemakers' food safety practices, knowledge of bacterial food contamination, their understanding of the functions of Government meat and poultry inspection, their attitudes toward selected food additives, and their preference for the ways in which food safety information can be disseminated. Areas of emphasis to be incorporated into food safety education programs and deterrents to consumer acceptance of these programs are also discussed.

KEYWORDS: Homemakers, food safety, bacteria, contamination, consumers, food poisoning, *staphylococcus*, *Clostridium perfringens*, *salmonellae*, botulism.

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PREFACE

This study is one of several conducted by the Consumer Economics and Demand Analysis Program, National Economic Analysis Division, Economic Research Service (ERS), U.S. Department of Agriculture (USDA), to determine consumer reactions to products and issues relating to the agricultural sector of the economy. The project was designed to provide guidelines for consumer education and information programs.

ACKNOWLEDGMENTS

The study was conducted under the direction of Dr. Alden C. Manchester of ERS. L. Yvonne Clayton, formerly of ERS, was particularly helpful in delineating specific objectives and designing parts of the questionnaire. Crossley Surveys, Inc., under contract with USDA, collected and tabulated the data; Staats Abrams and Elizabeth Bowes of Crossley Surveys, Inc., supervised these phases of the study.

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HIGHLIGHTS

In 1974, ERS conducted a nationwide survey of households to obtain data on homemakers' knowledge, attitudes, and practices regarding food safety. Results from 2,503 households showed that 63 percent of the homemakers sampled conducted at least one high-risk practice relating to handling, preparing, and storing selected meat and poultry products. Most of those households were designated as high risk solely because the homemakers indicated that they had left cooked meat, poultry, or salad sandwiches at room temperature for more than 2 hours. Many of the surveyed homemakers believed that after a meat or poultry item had been cooked, the item was safe left at room temperature. The homemakers did not realize that the food item could become a haven for bacterial growth which could cause food poisoning.

Thermometers placed in refrigerators of the sampled households revealed that 32 percent of the homemakers maintained their refrigerators at or above 45°F.--temperatures not cool enough to check bacteria.

The three leading types of food poisonings discussed in this report are staphylococcal poisoning, perfringens poisoning, and salmonellosis. Botulism is also discussed.

The survey also showed that many homemakers underrated their individual responsibility for hygienic food preparation. Approximately two-thirds of the respondents were unaware of the potential health problems associated with handling raw meat and poultry (which could carry harmful bacteria), and were unaware that these items, when prepared in conjunction with other foods, could cause cross-contamination. A majority of the homemakers believed it was either "not too likely" or "not at all likely" for inspected meat and poultry to carry harmful bacteria. This erroneous assumption--due perhaps to undue reliance upon Government inspection programs--may have contributed to some homemakers' lack of concern about cross-contamination. Underrating individual responsibility for hygienic food preparation was also demonstrated when approximately one-third of the homemakers indicated a lack of concern if an uncovered cut on their hand were to come in contact with meat or poultry items. An unprotected cut could be a source of staphylococcal contamination.

When asked what criteria they would use to determine whether the contents of a suspected can of food were safe to eat, about 30 percent of the homemakers said taste would be a factor--a disconcerting finding in view of potential botulism poisoning.

Homemakers' attitudes toward six food additives were explored. Three of these additives--vitamin C in fruit juice, vitamin D in milk, and iodine in table salt--were viewed by a majority of homemakers as safe. Saccharin, food coloring in meat,* and nitrite in hot dogs were considered "very safe" or "moderately safe" by a substantially smaller proportion of the homemakers.

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* Federal regulations prohibit use of food colorings in fresh meat, but permit use in some processed meat products. Use of food colorings must be clearly indicated on the label.

Approximately 9 out of 10 homemakers strongly thought that the names of chemical ingredients, additives, preservatives, and colorings added to foods should be printed on the label. The major reasons given for such a concern were that consumers have a right to know what is in the food they buy, there might be a necessity to know what is in the food because of an allergy or a medical diet restriction, that such additives were generally unsafe, and a desire for fresh, natural foods. A majority of the respondents believed that the U.S. Government should require a complete list of ingredients rather than allow the food industry voluntarily to contribute one.

Of the various ways to disseminate public food safety information, television ads were cited by more homemakers as the best means; food labels were cited next most often, followed by newspapers. Nearly 42 percent of the homemakers indicated that they had seen on television an ad or program about food safety sponsored by the U.S. Department of Agriculture, and nearly 30 percent claimed that they had heard on radio an ad or program on the subject, sponsored by the Department.

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by

Judith Lea Jones and Jon P. Weimer 1/

INTRODUCTION

Both Federal and State food inspection laws help guard against foodborne illnesses caused by bacteria or unsanitary processing. Nevertheless, the incidence of foodborne illness continues to be of great concern. During 1969-74, there was much variation in the number of microbial food poisoning cases reported annually by the U.S. Public Health Service, ranging from a low of 12,447 cases to a high of 28,568 cases. But most food-related illnesses are usually not reported, and estimates range from 2 to 10 million cases per year. 2/ The three leading types of food poisonings reported are staphylococcal poisoning, perfringens poisoning, and salmonellosis. Many of the reported cases of foodborne illnesses have been traced to foods prepared or eaten in the home.

Objectives

Interest generated by Congress, public health services, and other concerned groups has resulted in an intensified effort to plan consumer education programs. In 1974, the Economic Research Service, U.S. Department of Agriculture, conducted a nationwide survey of households to obtain data on homemakers' knowledge, attitudes, and practices regarding food safety. To provide essential guides for planning and facilitating consumer education programs, the objectives of this survey were as follows:

1) To obtain information on homemakers' food safety practices and knowledge of bacterial contamination of food;

2) To identify those groups of people having the greatest need for food safety information; and

3) To solicit homemakers' opinions on the most effective ways of disseminating food safety information.

A later section of this report, "Consumer Education Programs," suggests areas of emphasis to be incorporated into consumer food safety education programs, and discusses demographic analyses of target groups identified, effective ways of disseminating food safety information, and deterrents to consumer acceptance of food safety education programs.

Procedure

A personal interview questionnaire was developed to collect information on homemakers' knowledge, attitudes, opinions, and practices regarding food safety

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1/ The authors are social science analysts with the National Economic Analysis Division, Economic Research Service.

2/ Foodborne Outbreaks--Annual Summary (1969), (1970), (1971), (1972), (1973), (1974), Center for Disease Control.

topics (see appendix). The following topics were included: (1) food handling practices in the kitchen, (2) bacterial sources of food contamination, (3) Government meat and poultry inspection, (4) safety of foods containing additives and preservatives, (5) use of chemical pesticides, (6) convenience foods, (7) labeling information, (8) refrigerator temperature, (9) food safety information dissemination methods, and (10) demographic data on the age, education, family income, and household location of respondents.

Although the primary intent of the study was to determine the extent of potentially hazardous food preparation practices in surveyed households, the questionnaire was worded to conceal this intent. The questionnaire was designed to obtain forthright answers on questions pertaining to both awareness and food preparation practices without regard to correctness of the answer.

Findings are based on personal interviews with 2,503 homemakers during the summer of 1974. These homemakers represented a cross section of private households in both rural and urban areas of the United States, excluding Alaska and Hawaii. Respondents were selected entirely by area probability sampling procedures. The eligible respondent was defined as the household member who had the major responsibility for household food preparation. More detailed information on the sample design, error, and completion rate is presented in the appendix.

References in parentheses refer to numbered questions listed in the questionnaire and to tabulations which summarize answers. Both the questionnaire and the tabulations are in the appendix following the description of the sample. (Not all questions are shown in tabular form.)

FOOD POISONING

The term "food poisoning" covers a broad group of disorders varying in severity. Table 1 gives a comprehensive exposition of the four best-known culprits in food poisoning.

FOOD PREPARATION PRACTICES

Homemakers were grouped according to whether their method of preparing and storing food constituted a high or low risk of inducing foodborne illness in the household. A household was termed "high risk" if the homemaker practiced one or more of the following undesirable activities:

--Cooked hamburgers rare

--Left either cooked beef roast, pork roast, turkey, chicken, or salad sandwiches (tuna, chicken, turkey, or egg) at room temperature for more than 2 hours

Table 1--Illness caused by foodborne bacteria

Name of illness and description of bacteria	Transmitted by--	Symptoms	Characteristics of illness	Preventive measures
Salmonellosis *Salmonellae*. Bacteria, widespread in nature, live and grow in intestinal tracts of humans and animals.	Eating contaminated food or by contact with infected persons or carriers of the infection. Also transmitted by insects, rodents, and pets. Examples of foods involved: poultry, red meats, eggs, dried foods, dairy products.	Severe headache, followed by vomiting, diarrhea; abdominal cramps; and fever.	Onset: Usually within 12 to 36 hours. Duration: 2 to 7 days. Severe infections cause high fever and may even cause death. Infants, elderly persons, and persons with low resistence are most susceptible.	Heat food to 140°F. for 10 minutes, or to higher temperature for less time; for instance, 155°F. for a few seconds. Refrigerating at 40°F. inhibits the increase of salmonellae, although the bacteria remain alive in refrigerator or frozen and even in dried food.
Perfringens poisoning *Clostridium perfringens*. Spore-forming bacteria that grow in the absence of oxygen. Temperatures reached in thorough cooking of most foods are sufficient to destroy vegetative cells but heat-resistant spores can survive.	Eating food contaminated with abnormally large numbers of the bacteria. Examples of foods involved: stews, soups, or gravies made from poultry or red meat.	Nausea without vomiting, diarrhea, and acute inflammation of stomach and intestines.	Onset: Usually within 8 to 20 hours. Duration: May persist for 24 hours.	To prevent growth of surviving bacteria in cooked meats, gravies, and meat casseroles that are to be eaten later, cool foods rapidly and refrigerate promptly at 40°F. or below, or hold them above 140°F.
Staphylococcal poisoning (staph) *Staphylococcus aureus*. Bacteria growing in food produce a toxin that is extremely resistant to heat.	Food handlers who carry the bacteria, and by eating food containing the toxin. Examples of foods involved: custards, egg salad, potato salad, chicken salad, macaroni salad, ham, salami, and cheese.	Vomiting, diarrhea, prostration, and abdominal cramps.	Onset: Usually within 3 to 8 hours. Duration: 1 to 2 days. Generally mild and often attributed to other causes.	Growth of bacteria that produce toxin is inhibited by keeping hot foods abot 140°F. and cold foods at or below 40°F. Toxin is destroyed by boiling for several hours or by heating the food in a pressure cooker at 240°F. for 30 minutes.
Botulism *Clostridium botulinum*. Spore-forming organisms that grow and produce toxin in the absence of oxygen, such as in a sealed container.	Eating food containing the toxin. Examples of foods involved: canned, low-acid foods, and smoked fish.	Double vision, difficulty in swallowing, speech difficulty, and progressive respiratory paralysis.	Onset: Usually within 12 to 36 hours. Duration: 3 to 6 days. Fatality rate is high; in the United States about 65 percent.	Bacterial spores in food are destroyed by high temperatures obtained only in the pressure canner. 1/ More than 6 hours is needed to kill the spores at boiling temperature (212°F.). The toxin is destroyed by boiling for 10 to 20 minutes; time required depends on kind of food.

1/ For processing times in home canning, see Home and Garden Bulletin 8, "Home Canning of Fruits and Vegetables," and 106, "Home Canning of Meat and Poultry." Source: Home and Garden Bulletin No. 162, "Keeping Food Safe to Eat."

--Kept either beef roast, pork roast, turkey, or chicken leftovers in a refrigerator with the temperature above 45°F. 3/

--Stuffed a turkey a day or more before roasting it

--Stored leftover stuffing in a turkey

--Cooked a turkey partially, and completed the cooking later

On the basis of these criteria, about 63 percent of the total households sampled were classified as high risk. About half of the high-risk households committed only one of the undesirable practices, 27 percent committed two practices, 20 percent committed three or four practices, and the remaining 4 percent committed five to eight practices. The high-risk designation should not be interpreted to mean that household members would inevitably suffer food poisoning. Rather, these household members were more vulnerable to foodborne illness than they would have been if none of the practices was followed.

Sixty-six percent of the high-risk homemakers were classified as such solely because they left cooked meat or salad sandwiches at room temperature for more than 2 hours; another 21 percent were guilty of this practice, as well as making other food safety-related mistakes. Only 13 percent of the high-risk homemakers did not leave food at room temperature too long, but did commit other food safety-related mistakes.

Table 2 shows that younger homemakers, homemakers with more education, and homemakers with higher family incomes were somewhat more likely to represent high-risk households than were corresponding subgroups. About 70 percent of these groups' high-risk practices were associated with leaving susceptible foods at room temperature.

On the other hand, older homemakers (65 years and older), homemakers with grade school educations only, homemakers from low-income and often small households, and homemakers residing in rural areas were less likely to represent high-risk households than were corresponding subgroups. Homemakers from these small families, often with low incomes, were not as apt to serve a whole turkey, beef roast, or pork roast. Therefore, the number of mistakes that they might be found guilty of were reduced, along with the risk of foodborne illness.

Preparation of Selected Foods

Table 3 shows the high-risk practices associated with selected foods and the proportion of respondents committing these practices. Table 4 analyzes the proportion of homemakers by demographic characteristics, who left selected food products at room temperature for 2 hours or more. Following is a brief discussion of each food item.

3/ The temperature of the refrigerator should be kept below 40°F. Growth of food poisoning bacteria is relatively slow between 40°F. and 44°F. but increases more rapidly at 45°F. and above. In this study, households with refrigerators above 45°F. were classified high risk. A benefit of the doubt was given when the refrigerator was 45°F., allowing for some measure of error in recording.

Table 2--Percentage of households classified as high risk and percentage of these households leaving susceptible food at room temperature more than 2 hours, by demographic characteristics, 1974

Respondent characteristics	Proportion of households--	
	Classified as high risk	Classified high risk because homemaker left food at room temperature for more than 2 hours
	Percent	
U.S. total	63	66
Age:		
Under 30 years	67	72
30 to 49	68	63
50 to 64	63	65
65 and over	43	63
Education:		
Grade school or less	54	57
Some high school	62	58
High school graduate	67	70
Some college or more	64	69
Household income:		
Under $3,000	51	55
$3,000 to 5,999	52	58
$6,000 to 9,999	61	64
$10,000 to 14,999	68	71
$15,000 and more	69	70
Community size:		
Metro areas over 1 mil.	67	64
Other metro	64	69
Nonmetro	58	64
Region:		
Northeast	70	61
North Central	54	70
South	62	65
West	67	67
	Number	
Respondents	(2,503)	(1,570)

Question 36: "Let's suppose you had a cut on your hand while preparing a meal for your family. . . . please tell me your feelings about this cut coming into contact with meat or poultry."

Respondents characteristics	I would be concerned that the meat or poultry would contaminate my cut and that my cut would contaminate the meat or poultry	I would not be concerned about my cut coming in contact with meat or poultry	I would be concerned that my cut would contaminate the meat or poultry	I would be concerned that the meat or poultry would contaminate my cut	No answer	Cases
	Percent					Number
U.S. total	37	32	18	13	1/	2,503
Age:						
Under 30	44	28	19	9	1/	537
30 to 49	37	32	20	11	1/	940
50 to 64	36	30	15	18	1	612
65 and over	34	38	14	13	1	369
Education:						
Grade school or less	32	31	14	22	1	413
Some high school	39	30	18	13	1/	464
High school graduate	40	31	19	10	1/	1,005
Any college	41	33	16	10	1/	583
Region:						
Northeast	36	34	18	12	1/	639
North Central	33	35	17	14	1	664
South	44	24	19	13	1/	750
West	38	36	15	11	1/	450
Aware of facts:						
Total	45	22	22	11	1	558
High risk	46	23	21	9	1	321
Low risk	43	19	22	14	2	237
Not aware of facts:						
Total	36	35	16	13	1/	1,945
High risk	36	34	17	13	1/	1,249
Low risk	36	35	16	13	1/	696

1/ Less than 0.5 percent.

Table 3--Percentage of respondents committing high-risk practices, by food item, 1974 survey

Food product and related high-risk practice(s)	Proportion of total sample who served product		Proportion of respondents serving item who committed hazardous act	
	Percent	(Base)	Percent	(Base)
Hamburger:				
Cooked rare	95	(2,503)	4	(2,374)
Turkey:	60	(2,503)		
Left at room temperature 2 hours or more			37	(1,493)
Stored leftovers in refrigerator above 45°F. 1/			16	(1,185)
Stored leftover stuffing in turkey			10	(673)
Stuffed a day or more in advance			6	(978)
Partially cooked then completed later			3	(1,493)
Beef roast:	73	(2,503)		
Left at room temperature 2 hours or more			18	(1,823)
Stored leftovers in refrigerator above 45°F. 1/			14	(1,457)
Pork roast:	49	(2,503)		
Left at room temperature 2 hours or more			14	(1,218)
Stored leftovers in refrigerator above 45°F. 1/			17	(842)
Chicken:	94	(2,503)		
Left at room temperature 2 hours or more			13	(2,364)
Stored leftovers in refrigerator above 45°F. 1/			13	(1,173)
Salad sandwiches:	34	(2,503)		
Left at room temperature 2 hours or more			85	(861)

1/ Proportion based on number of respondents who claimed to have stored leftovers in a refrigerator.

Table 4--Percentage of homemakers, by demographic characteristics, who left selected food products at room temperature for 2 hours or more, 1974 survey

Respondent characteristics	Turkey	Beef roast	Pork roast	Chicken	Salad sandwiches
			Percent		
Respondents serving product who left it out at room temperature	37	18	14	13	85
Age:					
Under 30 years	39	15	13	11	85
30 to 49	37	18	14	12	89
50 to 64	34	23	16	15	84
65 and over	39	19	18	12	67
Education:					
Grade school or less	33	21	19	14	79
Some high school	40	20	18	12	78
High school graduate	39	18	14	13	87
Some college or more	34	16	9	12	90
Household income:					
Under $3,000	37	20	21	11	74
$3,000 to 5,999	38	19	16	15	68
$6,000 to 9,999	40	19	16	10	86
$10,000 to 14,999	35	16	14	11	89
$15,000 and more	36	21	10	15	89
Community size:					
Metro areas over 1 mil.	39	21	14	11	88
Other metro	32	17	14	14	88
Nonmetro	39	17	15	13	79
Region:					
Northeast	34	19	12	12	93
North Central	31	12	10	10	83
South	46	26	23	16	78
West	37	17	13	11	87
			Number		
Respondents	1,493	1,823	1,218	2,364	861

Hamburgers

The preparation of hamburgers or ground-meat patties contributed little to the incidence of high-risk households. Although 95 percent of all sampled respondents reported preparing hamburgers, only 4 percent indicated that they cooked hamburgers rare--one of the high-risk practices.

(Questions 1 and 3)

Turkey

Turkey preparation probably provides more opportunity for making errors than does the preparation of any other food investigated. Sixty percent of the homemakers interviewed claimed to have prepared a whole turkey during the previous year; older homemakers, homemakers with less education, those from lower income households, and those from rural areas were less likely to have prepared a whole turkey.

A majority (89 percent) of the homemakers who prepared turkey also cooked stuffing with it. *Salmonellae* are found in fresh poultry and red meat; thus when a fresh turkey is stuffed, the *salmonellae* may contaminate the stuffing and survive if the turkey is inadequately cooked. Therefore, one possible safety precaution is to cook the stuffing in a separate container. However, most homemakers do not. Only 23 percent of the homemakers who prepared stuffing cooked all of it in a separate container. If a homemaker prefers to cook stuffing inside the turkey, it is imperative that the stuffing be thoroughly cooked. It takes longer for the stuffing to be sufficiently cooked in the cavity of the turkey. The stuffing should reach a temperature of at least 165°F. during roasting to destroy *salmonellae*. Although the outer surface of the turkey appears done, this does not necessarily indicate that the stuffing is thoroughly cooked. However, a majority of homemakers (67 percent) said, "The stuffing is done when the turkey is done." A meat thermometer inserted into the center of the stuffing should be used to determine whether the stuffing has reached at least 165°F.

(Questions 11a, 12a,b, 13a, and 15)

The risk of contamination is further compounded when the stuffing is packed tightly. This practice may not allow the oven heat to penetrate through the turkey and stuffing as quickly. However, 40 percent of the homemakers who stuffed their turkeys packed them tightly. The survey showed that younger homemakers and homemakers with lower levels of education were more inclined to do this. Only 6 percent of the homemakers indicated that they stuffed the turkey a day or more before roasting it. Advanced stuffing of the turkey, combined with inadequate cooking, could allow time for *salmonellae* to multiply rapidly.

(Questions 13c and 14b)

As indicated earlier, leaving cooked meat or poultry products at room temperature for more than 2 hours is a risky practice. Approximately 37 percent of the homemakers who prepared turkey indicated that they left the turkey out for 2 hours or more. Temperature and time influence the growth of bacteria that causes food poisoning. Like other living things, bacteria need food,

Question 43b: Reasons for being concerned about cooked meat and poultry standing at room temperature. (Asked only of those respondents who said they would be "very concerned" or "somewhat concerned" about cooked meat and poultry standing at room temperature for 2 to 3 hours.)

Reasons	U.S. total
	Percent
Cooked foods spoil; would spoil in that length of time; refrigerate immediately	47
Not safe because of bacterial growth; bacteria grows fast on cooked foods; too susceptible to bacteria	40
If it is too hot, summer; wouldn't leave it out	9
Bugs, flies will get on meat	3
Cooked meat will dry out; lose its flavor	3
Other mentions	8
No answer	3
	Number
Cases	1,330

warmth, moisture, and time to grow and multiply. A standard rule, recommended by the U.S. Department of Agriculture, is that hot foods should be kept hot (above 140°F.) and cold foods should be kept cold (below 40°F.). Food may not be safe to eat if left for more than 2 to 3 hours at temperatures between 60°F. and 125°F., the zone where bacteria grow most rapidly.

(Questions 16a, 17c, d)

The reported percentage of homemakers (37 percent) who left cooked turkey at room temperature for 2 hours or more is probably conservative, since the survey focused essentially on the first meal that homemakers served with this turkey. Ninety-three percent of the homemakers who prepared turkey indicated that they had turkey left over from the initial meal. However, no attempt was made to examine the homemakers' preparation of subsequent meals involving the leftover turkey.

(Question 17a)

A homemaker's handling of leftover turkey, stuffing, and gravy, however, is critical. The time period that these items are left at room temperature must be considered cumulatively in terms of the 2 to 3 hours beyond which bacterial growth may have reached dangerous levels; that is, one must remember to count all time during serving, carving, and storing. Although refrigerating or freezing cooked meat or meat gravy may slow down the increase of bacteria, any bacteria that started to grow on the meat after cooking and before refrigerating will remain alive and multiply rapidly each time the meat is returned to the danger temperature zone. Leftover meat or gravy can be returned to this danger zone by merely warming it; 41 percent of the homemakers who claimed to have served leftover gravy merely warmed or heated it--not simmered it or boiled it to destroy bacteria. Leftover stuffing and turkey should be stored separately; otherwise bacteria growing on the cooked turkey may contaminate the stuffing. Ten percent of the respondents who cooked the stuffing in the turkey and had leftover stuffing did not remove the stuffing before storing it in the refrigerator.

(Questions 22a and 18b)

Beef Roast

Seventy-three percent of the respondents reported serving oven-roasted beef sometime during the year before the interview. The incidence and frequency of serving beef roast were directly related to income level and education. Older homemakers were less likely to serve beef roast. Eighteen percent of those cooking beef roast reported leaving the cooked roast at room temperature 2 hours or longer.

(Questions 4a, 5a, and 6c, d)

Pork Roast

Just under half of the sample respondents reported cooking pork roast. Of these respondents, 14 percent reportedly left their cooked roasts at room temperature 2 hours or more. Most homemakers appeared to be aware that pork roast

Cross tabulations of respondent characteristics

Background information--relationships among characteristics used as standard cross tabulations.1/

Respondent characteristics	Age				Education				Region				Cases
	Under 30	30 to 49	50 to 64	65 and over	Grade school or less	Some high school	High school graduate	Any college	North-east	North Central	South	West	
	Percent												Number
U.S. total	22	38	25	15	17	19	40	23	26	27	29	18	2,503
Age:													
Under 30	100				5	19	48	28	26	25	29	20	537
30 to 49		100			10	18	45	27	26	24	30	20	940
50 to 64			100		26	19	35	19	24	28	31	17	612
65 and over				100	38	20	22	17	23	32	32	13	369
Education:													
Grade school or less	6	22	38	34	100				20	24	42	14	413
Some high school	22	36	25	16		100			25	23	36	16	464
High school graduate	26	42	21	8			100		29	29	24	18	1,005
Any college	25	43	20	11				100	24	26	26	24	583
Region:													
Northeast	22	39	23	13	13	18	47	21	100				639
North Central	21	34	26	18	15	16	44	22		100			664
South	21	37	26	16	23	23	32	21			100		750
West	24	41	23	11	13	16	39	31				100	450
Family income:													
Under $3,000	14	13	23	50	54	20	16	5	19	19	46	16	256
$3,000 to $5,999	22	20	28	29	29	25	32	11	19	26	35	20	367
$6,000 to $9,999	28	37	22	12	16	27	37	19	25	24	31	20	493
$10,000 to $14,999	23	45	24	6	7	17	52	23	29	30	26	15	712
$15,000 and over	19	51	25	4	4	9	44	43	29	27	24	20	605
Community size:													
Metro areas--1 million and over	22	39	25	11	11	18	44	25	41	25	8	26	895
Other metro	22	41	22	14	12	17	43	27	20	26	37	17	730
Nonmetro	20	34	26	20	26	20	33	19	13	29	47	11	878

See footnote at end of table.

Continued

should be thoroughly cooked: only 1 percent of the homemakers cooked pork roast either rare or medium rare.

(Questions 7a, 8a, 9a, and 10c, d)

Chicken

Approximately 95 percent of the sample respondents reported preparing chicken during the year before the interview. Among those who prepared chicken, 13 percent indicated that they left the cooked chicken at room temperature 2 hours or more.

(Questions 19a, 20a, and 21c, d)

Salad Sandwiches

Thirty-four percent of the homemakers had prepared tuna fish, turkey, chicken, or egg salad sandwiches for work or school lunches during the year preceding the interview. Approximately 85 percent of these respondents stated that these sandwiches had been left at room temperature for more than 2 hours. Younger homemakers, homemakers with higher educational levels, those from nonrural areas, and those from higher income households were more inclined to have prepared salad sandwiches, and were more likely to have left them at room temperature for 2 hours or more. It would be expected that these homemakers, presumably with working spouses, with school children, and maybe even working themselves, would be more apt to commit such a practice.

(Questions 23a and 24c)

Refrigerator Temperature

An attempt was made to determine the range of temperatures at which homemakers maintained their refrigerators. Each interviewer had a thermometer which had been calibrated for accuracy. 4/ Midway through the interview, the respondent was asked if a thermometer could be placed in the refrigerator. If this request was granted, the thermometer was placed on the middle shelf of the refrigerator, and approximately 30 minutes later it was checked. Thirty-two percent of the sample households had refrigerators registering 45°F. or above--a range which is not cold enough to adequately retard the growth of bacteria even for a relatively short time. There was a tendency for higher refrigerator temperatures to be prevalent in the households of respondents with lower educational levels and of those with lower incomes (table 5).

4/ The procedures used to gage the refrigerator temperatures were not totally refined. Despite attempts to achieve standardization, undoubtedly there was a certain amount of variability in the manner in which the temperatures were obtained and recorded. Malfunctioning of thermometers also may have occurred on occasion. However, the temperature readings obtained provided a rough index of the number of refrigerators operating in an unsafe temperature range.

Table 5--Percentage of respondents with inadequate refrigerator temperatures, by demographic characteristics, 1974

Respondent characteristics	Homemakers with refrigerators 45°F. or above
	Percent
U.S. total	32
Education:	
Grade school or less	41
Some high school	34
High school graduate	28
Some college or more	30
Household Income:	
Under $3,000	42
$3,000 to 5,999	37
$6,000 to 9,999	34
$10,000 to 14,999	27
$15,000 and more	29

(Questions 27 and 52a)

HOMEMAKERS' AWARENESS OF FOOD SAFETY PRINCIPLES

Homemakers were also classified by their awareness of certain key food safety principles. A homemaker who was aware of the risks of cross-contamination and who was concerned about leaving cooked meat at room temperature for 2 hours or more was considered to be aware of food safety principles.

Cross-Contamination

Homemakers were asked to imagine a meal preparation situation in which they would cut up raw meat for a stew and chop fresh vegetables for a salad using the same knife and cutting board. Presented with three alternatives, they were asked to choose which one they would use. The three alternatives were as follows:

1) After cutting up the fresh meat, I would chop the fresh vegetables and then wash the knife, the cutting board, and my hands with soap and water.

2) After cutting up the fresh meat, I would rinse off the knife, the cutting board, and my hands, and then chop the fresh vegetables.

3) After cutting up the fresh meat, I would wash the knife, the cutting board, and my hands with soap and water, and then chop the fresh vegetables.

The third statement is correct. Unless the knife, the cutting board, and the hands are thoroughly washed with soap and hot water before the vegetables are chopped, bacteria can be transferred from the fresh meat to the salad vegetables. However, only slightly more than one-third of the homemakers interviewed chose the correct statement.

(Question 25)

The proportion of sampled households designated as high risk was based only on those questions reflecting homemakers' actual reported food-related practices. This proportion may be an underestimation since there are facets of homemakers' food safety practices that are not amenable to questions that would reflect those practices. For cross-contamination to occur, for example, a specific set of conditions is necessary. It may be difficult for homemakers to remember when such conditions were present and what their behavior was under those conditions. Thus, it might be difficult for homemakers to accurately remember and report a specific situation where they may have failed to wash their hands, their utensils, and cutting board or surface after handling raw meat and before working with other foods.

Information on this facet of food safety was better obtained when the homemaker was presented with a hypothetical situation and alternative procedures, such as the ones mentioned above. If it can be inferred that the homemakers who selected a procedure which invited cross-contamination used that procedure in preparing and handling food, then the proportion of designated high-risk households might be even higher than reported by this survey.

Cooked Meat Left at Room Temperature

When homemakers were asked how concerned they would be about leaving uncooked meat and poultry at room temperature for 2 to 3 hours, 88 percent indicated that they would be "very concerned" or "somewhat concerned."

When asked a similar question about cooked meat left at room temperature for 2 to 3 hours, 53 percent stated that they would be "very concerned" or "somewhat concerned." Many homemakers apparently believed that once a meat or poultry item has been cooked, it is quite safe to leave it at room temperature. They apparently did not realize that this cooked item can become a haven for bacterial growth and a cause of illness.

Table 6 illustrates the degree to which homemakers were concerned about leaving cooked meat at room temperature for 2 to 3 hours.

In total, 78 percent of the homemakers sampled were either unaware of or unconcerned about cross-contamination and leaving cooked meat at room temperature for more than 2 hours.

Table 6--Respondents' attitude toward leaving cooked meat at room temperature for 2 to 3 hours, by selected characteristics, 1974

Respondent characteristics	Attitude	
	Very concerned or somewhat concerned	Little or no concern
	Percent	
U.S. total	53	46
Education:		
Grade school or less	54	46
Some high school	46	54
High school graduate	51	48
Some college or more	62	38
Region:		
Northeast	56	44
North Central	56	43
South	47	52
West	55	45
Community size:		
Metro areas over 1 mil.	56	44
Other metro	54	46
Nonmetro	50	50

(Questions 42a, b and 43a, b)

BEHAVIOR-AWARENESS CLASSIFICATION

Although the criteria for identifying a homemaker as unaware were not as comprehensive as criteria for designating a homemaker as high risk, it is possible to broadly classify homemakers into one of four behavior-awareness categories.

	Awareness	
	Aware	Unaware
	Percent	
Behavior:		
Low risk	9	28
High risk	13	50

About 9 percent of the homemakers sampled were categorized as individuals whose knowledge and behavior coincided. These homemakers were knowledgeable

about food safety principles and concepts, and this was reflected in the kitchen. Approximately 28 percent of the homemakers did not appear to be aware of or knowledgeable about proper food safety principles, but they also did not practice unsafe methods of preparing, cooking, and handling food. Approximately 13 percent of the homemakers appeared knowledgeable about food safety principles, but proceeded to practice unsafe procedures. The largest group, 50 percent, or an estimated 35 million homemakers, did not appear to be aware of certain food safety principles. This was reflected in the kitchen. This group of homemakers is somewhat more likely to be reasonably well educated, young to middle aged, members of higher income households, and residing in a metropolitan area in the northeastern or western parts of the United States (table 7).

Table 7--Percentage of homemakers classified as high risk, unaware, by demographic characteristics, 1974

Respondent characteristics	Homemakers classified as "high risk," "unaware"
	Percent
U.S. total	50
Education:	
Grade school or less	43
Some high school	51
High school graduate	53
Some college or more	49
Age:	
Under 30 years	55
30 to 49	53
50 to 64	51
65 and over	32
Household income:	
Under $3,000	41
$3,000 to 5,999	41
$6,000 to 9,999	49
$10,000 to 14,999	54
$15,000 and more	54
Community size:	
Metro areas over 1 million	54
Other metro	50
Nonmetro	45
Region:	
Northeast	58
North Central	43
South	47
West	53

Government Inspection of Meat and Poultry

Under the Federal Meat Inspection Act and Federal Poultry Products Inspection Act, the U.S. Department of Agriculture (USDA) is responsible for inspecting for wholesomeness and proper labeling all meat and poultry products moving in interstate commerce. States are required to maintain inspection services that are equal to Federal inspection for products moving in interstate commerce. However, since *salmonellae* are present everywhere in our environment, and since it is not economically or practically feasible to produce and market sterile meat and poultry products, these Government inspection procedures do not include provisions for testing or regulating the presence of *salmonellae* on fresh meat and poultry. Some homemakers are apparently unaware that absolute protection is not always attainable.

Homemakers were asked if they thought it was likely for meat and poultry (almost 100 percent of which is Government inspected) to carry harmful bacteria or germs. Approximately 63 percent of the respondents thought it was "not too likely" to "not at all likely" for inspected meat and poultry to bear harmful bacteria. If Government meat and poultry inspection conveys the idea of a sterile product to some homemakers, it may be creating a false sense of security for these homemakers. The homemaker under this impression does not adequately comprehend the need for meat and poultry handling precautions, particularly in terms of cross-contamination. Indeed, these results suggest that many homemakers may underrate their individual responsibility for hygienic food preparation.

Interestingly, homemakers with higher educational levels were more inclined to believe that it was not likely for the inspected meat and poultry items to carry harmful bacteria. A 1969 USDA survey showed that higher educated homemakers were more aware than those with less education of the fact that the meat they bought was inspected by USDA. 5/ Awareness of Government inspection programs, however, cannot necessarily be equated with comprehension. It may be that this increased awareness of Government inspection programs on the part of higher educated homemakers has contributed to an unrealistic perspective regarding the functions and scope of these programs. However, this hypothesis is certainly subject to further investigation.

(Question 30)

Staphylococcal Contamination of Foods

The underrating of individual responsibility for hygienic food preparation is evident in data from another survey question. Homemakers were requested to imagine preparing a meal while they had a cut on their hand. They were then asked to indicate their feelings about this cut coming in contact with meat or poultry. There is real danger that a cut on the hand could lead to staphylococcal contamination of food during meal preparation. However, 32 percent of the

5/ Homemakers' Opinions about Selected Meats. U.S. Dept. Agr., Mkt. Res. Rpt. No. 854, July 1969.

homemakers stated that they would not be concerned about their cut coming in contact with meat or poultry. An additional 13 percent indicated that they would be concerned that the meat or poultry would contaminate their cut. Older homemakers and homemakers with lower household incomes were more likely to evidence no concern whatsoever about their cut coming in contact with meat or poultry. Again, there appeared to be either indifference or lack of awareness on the part of some homemakers regarding personal sanitary procedures that are important in preventing food poisoning.

(Question 36)

Picnic Food

The conclusion that many homemakers were unaware of the time-temperature relationship with respect to bacterial growth is further reinforced by results obtained from another survey question. Respondents were shown a list of susceptible foods and told to assume a situation in which the items could not be kept very hot or cold. Respondents were then asked which of these items they would avoid fixing for a picnic "because it might become unsafe to eat in 3 hours if not kept very hot or cold." The food items are listed below:

Food item	Would avoid	Would not avoid
	Percent	
Fried chicken	27	72
Roast beef	33	65
Baked ham	33	66
Deviled eggs	61	37
Potato salad	63	36
Cole slaw	64	35
Luncheon meat on a platter	67	33
Chicken, tuna, or egg salad sandwiches	74	25
Cream or custard pie	79	20

Approximately two-thirds of the homemakers did not express reservations about fixing fried chicken, roast beef, or baked ham for a picnic. About one-third of the homemakers stated that they would not avoid fixing deviled eggs, potato salad, or cole slaw, even though there was no way of keeping them very hot or cold. A smaller proportion of the homemakers reported that they would prepare various salad sandwiches (chicken, tuna, or egg) and cream or custard pies for a picnic.

(Question 26)

Refrigeration

Prompt cooling and proper refrigeration of foods are recommended to hold the number of bacteria to a safe level for a reasonable length of time. Cooked meats, poultry, and seafoods should not be stored for more than 1 week in the refrigerator; these leftovers should be heated thoroughly to 165°F., and broths and gravies should be boiled for several minutes. Keeping foods cold inhibits, but does not entirely prevent, bacterial growth. About 1 in 5 homemakers believed that refrigeration of foods completely stops the growth of harmful bacteria, and the same proportion believed that freezing kills any bacteria that may cause food poisoning. Refrigerator temperatures 44°F. and below permit a slow rate of bacterial growth; temperatures above 44°F. are conducive to more rapid growth of bacteria. The demarcation between 44°F. and 45°F., in terms of keeping food safe to eat for several days, is vital.

Approximately 66 percent of the sampled homemakers erroneously agreed that cooked foods should be left out to cool before being put into the refrigerator. Actually, the homemaker should serve foods soon after cooking or refrigerate them promptly. It is safe to refrigerate hot foods if they do not raise the temperature of the refrigerator above 44°F. Otherwise, hot foods can be cooled quickly by setting the containers in ice water before refrigerating.

(Question 41)

Canned Food

What factors would alert homemakers that a canned food item might be unsafe to eat? When asked what, if anything, would make them think that an unopened can might contain food unsafe to eat, the majority of homemakers replied that signs such as dents and bulges would make them shy away from these items, approximately one-fifth of the respondents stated that if the can were leaking or showed signs of being punctured, they would not buy it.

Homemakers were also asked what signs, after opening the can, would make them think that the food inside was unsafe to eat. The majority of homemakers mentioned odor; nearly half said discoloration of the can or the food; and some suggested the presence of mold or fungus. About 10 percent of the homemakers indicated that taste would be their index. For those respondents who did not mention taste in answer to this initially unstructured question, a direct question was phrased: "Would you probably taste the food to determine if it were all right?" An additional number of homemakers responded "yes," raising the total proportion of homemakers who would resort to taste to determine if the food in a can was unsafe or safe to eat to 30 percent. This is a disconcerting result in view of potential botulism poisoning. Homemakers with less education and those from households with lower incomes were more inclined to say they would taste the contents of a suspected can of food than were homemakers from corresponding socioeconomic subgroups.

(Questions 29a, b, c)

Common Sources of Contamination

Homemakers were asked to match four terms relating to foodborne illness--trichinosis, botulism, staph, and salmonella--with four statements describing common sources of contamination. The appropriate matches between the foodborne illness-related terms and the descriptive statements identifying sources of contamination are shown below:

Foodborne illness-related terms	Appropriate matches	Incorrectly identified
		Percent
Salmonella	Raw poultry and eggs	44
Botulism	Canned foods	36
Trichinosis	Undercooked pork	35
Staph	Infected cuts on hand	32

Fifty percent of the respondents correctly identified all four foodborne illness-related terms, 20 percent identified two correctly, 13 percent identified one correctly, and 17 percent did not identify any correctly. See table 8 for the percentage of homemakers who identified the terms correctly.

Table 8--Percentage of respondents correctly identifying food borne illness-related terms, by demographic characteristics, 1974

Respondent characteristics	Number of correctly identified foodborne illness-related terms				
	Four	Three 1/	Two	One	None
	Percent				
U.S. total	50	--	20	13	17
Age:					
Under 30 years	48	--	26	12	13
30 to 49	56	--	19	12	13
50 to 64	52	--	16	12	20
65 and over	36	--	17	16	30
Education:					
Grade school or less	25	--	17	16	43
Some high school	36	--	23	17	24
High school graduate	52	--	23	13	11
Some college or more	77	--	14	6	3
Household income:					
Under $3,000	20	--	17	18	46
$3,000 to 5,999	43	--	19	14	24
$6,000 to 9,999	46	--	17	17	20
$10,000 to 14,999	56	--	23	10	10
$15,000 and more	66	--	20	8	7
Region:					
Northeast	51	--	22	12	15
North Central	55	--	17	14	14
South	41	--	21	14	25
West	58	--	18	10	13

1/ Less than 1 percent.

(Question 33)

Additives and Preservatives

Respondents were asked to rate six food additives on a 4-point scale ranging from "very safe" to "not at all safe." Additives viewed by homemakers as generally favorable--that is, either "very safe" or "moderately safe"--were vitamin C in fruit juice (94 percent of the homemakers rated it favorably), vitamin D in milk (88 percent), and iodine in table salt (86 percent). The other three additives considered "very safe" or "moderately safe" by substantially smaller proportions of the respondents were saccharin in low-calorie soft drinks (59 percent), food coloring in meat (43 percent), and nitrite in hot dogs (36 percent). 6/ Homemakers with a higher level of education viewed all six additives more favorably than did homemakers with a lower level of education. In addition, younger homemakers and those from higher income households were more favorably oriented toward vitamin D in milk and toward food coloring in meat.

It is evident from these results that most homemakers felt that the use of vitamins (vitamins C and D) and minerals (iodine) was quite safe, but there was much less consensus about the safety of the other selected additives.

Additives	Homemakers who considered the selected additives very or moderately safe
	Percent
Fruit juice fortified with vitamin C	94
Vitamin D in milk	88
Iodine in table salt	86
Saccharin in low-calorie soft drinks	59
Food coloring in meat	43
Nitrite as a preservative in hot dogs	36

(Questions 37 a-f)

Food Labels

Approximately 90 percent of the homemakers thought it was very important that the names of chemicals, additives, preservatives, and colorings be printed on food labels. Older homemakers, those with less education, and those from households with lower incomes were less concerned about this information being available. Roughly half of the homemakers who supported full disclosure of additives on food labels claimed that the consumer has a right to know what is in the food, and about a third suggested that an allergy or a medical diet restriction necessitated such information. About 10 percent of the homemakers believed that additives are generally unsafe, and the same percentage wanted fresh, natural foods. The various socioeconomic subgroups did not differ in their reasons for wanting full disclosure on labels, except for the homemakers between 50 and 64 years of age, who were more inclined to reason in favor of

6/ Federal regulations prohibit use of food coloring in fresh meat but permit use in some processed meat products. Use of food colorings must be clearly indicated on the label.

health problems. A majority of the respondents (91 percent) believed that the Government should require names of all ingredients on food labels and not leave such labeling to the discretion of the food industry.

(Questions 38a, b and 39)

With the exception of some standardized foods, a list of ingredients is required to be printed on the labels of all processed food products, including processed meat and poultry products. The list of ingredients must appear in order of amount. Controversy exists about the adequacy of the information provided in some instances. Ingredients, including spices, some artificial flavoring and coloring agents, and vegetable oils, may be listed without specific identification. Some advocates of more informative labeling argue for disclosure of the total percentage each ingredient comprises of the item.

Nutritional labeling of most foods is voluntary. 7/ However, if a product is fortified by the addition of a nutrient, or if a nutritional claim is made in the labeling or advertising, that product label must have full nutritional labeling. Examples of nutritional claims include any reference to proteins, fats, carbohydrates, calories, vitamins, minerals, or use in dieting. Any such reference will necessitate full nutritional labeling. The following standard format and headings are required:

Nutritional Labeling

1. Serving size
2. Servings per container
3. Calorie content
4. Protein content
5. Carbohydrate content
6. Fat content
7. Percentage of U.S. Recommended Daily Allowances of protein, vitamins, and minerals

Nutritional labeling provides consumers with more specific information to help them determine the nutritional quality of food.

Chemical Pesticides

Homemakers were shown a list of foods: fresh fruits and vegetables, frozen fruits and vegetables, canned fruits and vegetables, dried foods, and meat and poultry. When asked which, if any, might carry traces of chemicals used to kill insects and other pests, only 5 percent of the surveyed homemakers believed that none of these items carry traces of such chemicals. A large majority of homemakers (88 percent) said fresh fruits and vegetables may carry traces of such chemicals. Substantially smaller though still sizable proportions said chemicals used to kill insects and other pests may be found in dried foods, such as flour and rice; in meat and poultry; in frozen fruits and vegetables; and in canned fruits and vegetables (see table 9). Generally homemakers

7/ Food and Drug Administration guidelines concerning nutritional labeling became effective in July 1975. Similar USDA guidelines for meat and poultry products are being formulated, but are not yet in effect.

with more education and homemakers from households with higher incomes were more likely than corresponding subgroups to think foods carry traces of these chemicals. In addition, younger homemakers were more inclined to believe that each of these foods, with the exception of meat and poultry, contain pesticides.

Table 9--Percentage of homemakers believing selected foods have traces of pesticides, 1974

Respondent characteristics	Foods homemakers thought have traces of pesticides				
	Fresh fruits and vegetables	Dried foods	Meat and poultry	Frozen fruits and vegetables	Canned fruits and vegetables
	Percent				
U.S. total	88	46	41	32	28
Age:					
Under 30 years	87	49	39	34	37
30 to 49	90	49	43	35	29
50 to 64	91	43	41	31	24
64 and over	79	37	37	24	19
Education:					
Grade school or less	77	32	29	22	18
Some high school	85	48	35	26	22
High school graduate	91	44	41	30	26
Some college or more	94	56	53	48	42
Household income:					
Under $3,000	76	38	32	26	22
$3,000 to 5,999	83	39	37	27	23
$6,000 to 9,999	87	43	36	31	28
$10,000 to 14,999	89	47	41	31	26
$15,000 and more	95	54	50	42	37

Homemakers were asked whether they would consider these chemicals safe if used properly according to Government regulations. Given this qualification, approximately 75 percent of the homemakers felt that under such conditions these pesticides would be either "very safe" or "moderately safe." There was no distinction among the socioeconomic subgroups regarding this point (table 9).

(Questions 40a, b)

Convenience Foods

Approximately 86 percent of the homemakers reported using convenience foods: foods which are partially or completely prepared so that the homemaker has little work to make the desired dish or meal. About 30 percent of the homemakers indicated that they use more convenience foods today than they

did 5 years ago, 30 percent said they use the same number, and about 25 percent said they use fewer convenience foods today than they did 5 years ago. Nearly one-third of the respondents thought that convenience foods are less safe than comparable dishes or meals made from "scratch." Feelings about the uncertain safety of convenience foods were triggered by concerns about wholesomeness in terms of quality of ingredients, cooking procedures, and sanitary handling (62 percent); the use of preservatives (16 percent); and the possibility that food may thaw and be refrozen before sale (15 percent). There were no significant differences among the various socioeconomic subgroups in their opinions about the safety of convenience foods.

(Questions 44a, b, c)

CONSUMER EDUCATION PROGRAMS

Areas of Emphasis

Results of this survey point to a number of areas that could be beneficially incorporated into a consumer education program concerning food safety.

Bacterial Contamination of Food

Many homemakers appeared to ignore or were unaware of important time-temperature relationships in preparing, serving, and storing cooked meat, poultry, and foods containing eggs or milk. There appeared to be a need to emphasize the importance of personal sanitary practices in handling foods, as many respondents were unconcerned about having unprotected cuts on their hands while preparing meals. Similarly, many respondents were unaware of potential health problems caused by cross-contamination. It was also disconcerting, particularly in view of reported accounts of botulism, that approximately one-third of the respondents indicated that they would taste the contents of a suspected can of food to determine if it were safe to eat.

Government Inspection of Meat and Poultry

The U.S. Government, more specifically the U.S. Department of Agriculture, has the responsibility to assure consumers that raw meat and poultry products are unadulterated and are properly marked, labeled, and packaged. However, raw meat and poultry products containing *salmonellae* are not considered adulaterated when inspected, passed, and marked by inspectors. These products are not dangerous to consumer health if proper handling and preparation precautions are taken.

It appears, however, that many homemakers who buy and prepare meat and poultry items assume that such products are free of harmful bacteria, and as a result, may underrate their responsibilities for hygienic food preparation. Obviously, a viable consumer education program will have to delineate the limits of inspection and detail the proper methods of handling and preparing these products.

Additives and Pesticides

Although the majority of homemakers in this study felt that vitamins and minerals were generally safe, there appeared to be concern about other food additives--at least about those surveyed in this study. Perhaps relative uncertainty about the pros and cons of food additives explains some of the generally negative feelings about them. The negative response to "nitrite used as a preservative in hot dogs," for example, may to some degree have reflected a lack of awareness about the trade-offs involved in its use. Controversy exists over nitrite because experiments with animals indicate a positive relationship between extremely high concentrations of nitrite in experimental animal diets and incidence of certain types of cancer. 8/ On the other hand, consumers should be aware that the very small amounts of nitrite used in cured meat and poultry products (bacon, frankfurters, bologna, luncheon meats, hams, corned beef, and canned meats) are necessary to prevent botulism. Of course, some consumers may decide to avoid eating cured meat and poultry products.

The trend toward urban, and more specifically suburban, living and the increasing number of women in the work force have fostered the development of convenience and manufactured foods. If color, flavor, texture, and safety are to be maintained in these foods, which are often expected to have a lengthy shelf life, additives are required. A viable consumer education program should present rational and acceptable information on food additives. The credibility of such a program, of course, is based on consumers' trust that additives are kept to the minimum necessary and that their safety is continually monitored.

Consumers' opinions about the use of pesticides in food production were briefly covered in this survey. It is interesting to note that respondents believed the presence of pesticides is quite widespread; only 5 percent of the homemakers believed that the listed food items were free from traces of pesticides. A majority of the homemakers felt that pesticides would be safe if used according to Government regulations. In that pesticides kill pests, perhaps it is only obvious to the consumer that they are hazardous and, accordingly, have been subject to stringent regulatory efforts all along.

Demographic Analyses of Target Groups

A substantial proportion of each of the demographic subgroups were represented in the high-risk category (see table 2). Interestingly, younger homemakers, homemakers with higher educational levels, and those with higher family incomes were somewhat more likely to be classified in this category. Most of these homemakers' high-risk practices were related to leaving susceptible foods at room temperature. Because these homemakers were younger, better educated, and from higher income households, it appeared that they would be easier to reeducate with a single emphasis program since their high-risk practices were largely concentrated in one area.

Homemakers with lower educational levels and those from lower income households were not as apt to serve a whole turkey or beef or pork roast, thus

8/ Newberne, P.M. and R.C. Shank, "Induction of Liver and Lung Tumors in Rats by the Simultaneous Administration of Sodium Nitrite and Morpholine," Food and Cosmetics Toxicology, 1973, pp. 819-825.

the number of high-risk practices they had committed and the potential risk of food poisoning were reduced.

Older homemakers, homemakers with less education, and homemakers from the South were more likely to leave cooked beef roast, pork roast, and chicken at room temperature than were homemakers from other socioeconomic and geographic subgroups. Although the incidences of high-risk practices were somewhat less for these socioeconomic subgroups, the diversity of their behavior suggests that education programs for these groups will need to be more intense. Lower socioeconomic subgroups were more likely to taste the contents of a suspected can of food, which could lead to possible botulism poisoning.

Older homemakers and those from lower income households indicated less concern about cuts on their hands while preparing food; higher educated homemakers were less likely to entertain the possibility that raw meat and poultry could carry harmful bacteria.

All socioeconomic subgroups were guilty of incorrectly selecting the proper way of preventing cross-contamination. Homemakers from the South were more likely to give the correct answer for this question than were homemakers from other geographic regions of the country. There were no other significant differences among the various socioeconomic subgroups.

Dissemination of Food Safety Information

To inform homemakers on how to improve safety in storing, handling, and preparing foods, it is important to know how to reach them effectively. Survey respondents selected from a list the best ways to get food safety information; respondents then chose the one best way. A majority of respondents cited television spots, food labels, and newspapers as good ways to receive food safety information. The following tabulation shows percentages of 2,503 respondents selecting sources of food safety information dissemination:

	Best ways	The best way
	Percent	
Television	59	27
Food labels	58	24
Newspapers	55	16
Magazines	48	13
Publications through the mail	34	10
Radio spots	25	3
Handouts or displays at retail stores	19	2
Demonstrations in retail stores or community workshops	14	2
Handouts given to children at school	11	1
Other mentions	3	1
No answer	1	1

Looking at these responses in terms of homemakers' characteristics reveals some interesting findings. As seen in the tabulation above, about 60 percent of the respondents cited television as one of the favored ways of receiving food safety information. Demographically, southerners and homemakers with less education were more likely than others to mention television. Homemakers 65 and older and those with less education advocated radio as a means of getting safety information more often than younger homemakers and homemakers with higher education.

Younger homemakers, homemakers with more education, homemakers with higher incomes, and those residing in the Northeast section of the country were more likely than their socioeconomic counterparts to consider food labels a valuable means of receiving information. Perhaps because they do more canning and other types of food processing in the home, rural homemakers were less interested in receiving safety information on food labels than urban homemakers.

Respondent groups interested in newspaper coverage of food safety information paralleled those seeking such information on food labels. Newspaper coverage was additionally favored by those living in the North Central section of the country.

Like food labels and newspapers, magazines were considered a good way of receiving food safety information by better educated homemakers and those with high family incomes.

Interestingly, homemakers under 30 were more apt than other age groups to favor publications through the mail, handouts or displays in retail stores, and food labels as particularly useful sources of information.

Westerners were more inclined than their regional counterparts to want information disseminated through handouts, displays, and demonstrations at retail stores.

(Questions 45a, b)

Deterrents to Consumer Acceptance

A main problem involved in any information education program regarding food safety is effectively emphasizing the importance of food handling procedures. Undeniably, the food we eat in this country is safer than that in most other countries.

Possible factors that may serve as deterrents to effective consumer information programs as they relate to bacterial contamination are as follows:

1. It is conceivable that there are many people who have not actually had food poisoning. Approximately 85 percent of the homemakers surveyed claimed that no one in their households had any kind of illness or discomfort in the past 5 years that might have been caused by eating spoiled or unsafe food.

(Question 34)

2. It is also very likely that many people have actually experienced food poisoning, but have attributed the symptoms to something else--the flu or indigestion--which causes similar symptoms.

3. For a few of the people who have experienced foodborne illness, the symptoms, although unpleasant, may have been considered either so transitory or minor in nature that the illness simply did not leave much of an impact on the victim. This contention is supported by survey data showing that in 75 percent of the households where someone reportedly experienced a foodborne illness, this illness was not reported to anyone such as a doctor or public health official. A healthy adult may indeed be able to successfully recover from a bout with foodborne illness. However, in particularly susceptible persons such as infants, elderly persons, or those with chronic diseases, foodborne illness can be devastating.

(Question 35e)

Any effective consumer information program is going to have to overcome such obstacles and inform the consumer of the dangers of careless food handling.

CONCLUSIONS

There was an indication from the survey that homemakers may place undue reliance upon Government inspection functions for prevention of bacterial contamination of raw meat and poultry products. There were indications, also, that many homemakers were unaware of the existence in the environment and in the human body of the sources of food poisoning bacteria, particularly *salmonellae* and *C. perfringens*. The application of ordinary sanitary practices will prevent many foodborne illnesses in the home. Occurrence of foodborne illness is largely the result of apathy, poor judgment, carelessness, or inadequate knowledge of the proper way to handle foods. It appears that many people who buy and prepare food assume that all products in retail markets are safe and wholesome. Since general experience may tend to support this view for many products, consumers may still be unaware that absolute protection is not always attainable, and thus they underrate their individual responsibilities for selective buying, proper home storing, and hygienic food handling and preparation. Both Government and industry bear heavy responsibilities, not only to maintain the wholesomeness of the food supply, but to impress upon the consumers their role in the proper handling and preparation of everything they eat. There is also an indication that homemakers want the Government to be actively involved in requiring manufacturers to print all ingredients on food labels. Perhaps this attitude expresses homemakers' uneasiness about the use and function of certain additives in food.

APPENDIX

Sample Design

The 2,503 homemakers interviewed in this survey were a sample of homemakers living in private households in the United States, excluding Alaska and Hawaii For this study, a homemaker was defined as the person with the major responsibility for decisions on purchasing and preparing food for household use. A private household was defined as one where cooking facilities were available. There were no other qualifications for eligibility.

Sampling Method

The defined universe of households was sampled using a multistage stratified area probability design. At each stage the probability of selection was made proportionate to population size. Under the method used each household had an equal and known probability of being selected into the sample. Thus, the sample was self-weighting for projecting to the universe within specific tolerance limits. The sampling frame was stratified by geographic area, population density, and intercensal growth rate.

The sample for this study was drawn from the contractor's master frame of households, which was developed along the following lines. All counties in the conterminous States were subdivided into nine census divisions. The counties were then grouped into those that fell into Standard Metropolitan Statistical Areas (SMSA's) and those that did not. Counties in SMSA's were stratified into five population strata ranging from more than 1 million to less than 100,000. Nonmetropolitan counties were divided into four groups according to their level of urbanization, ranging from those that were 50 percent or more urbanized down to counties with no urbanized place. Nonmetropolitan counties were further subdivided into several groupings reflecting the estimated rate of intercensal growth.

With probability proportionate to size, 80 primary sampling units (PSU's--counties or groups of contiguous counties) were selected from the frame formed by the stratification described above. These units contained 180 counties.

The second stage consisted of selecting a sample of several hundred minor civil divisions (MCD's) within the 80 PSU's. These MCD's fell into two groups: those in Bureau of the Cenus Block Statistics areas and all others. From MCD's in the Block Statistics areas, individual blocks or groups of blocks were selected with probability proportionate to size. In MCD's not covered by Block Statistics, enumeration districts were selected also with probability proportionate to size. To obtain sample segments (block and enumeration districts) of approximately equal size, small blocks were combined, as were small enumeration districts; large ones were systematically subdivided.

For this survey, 500 sample segments were selected; within each sample segment, six households (a sample cluster) were predesignated, providing an estimated 3,000 Sample Listing Units (SLU's). No deviation from specified procedures was permitted.

A differential callback procedure was used wherein three attempts were made on all SLU's located in SMSA's and all other urban areas as defined for census purposes, and two attempts were made in those rural areas not included in the SMSA's. No substitutions were permitted for sample households that did not yield interviews. These efforts in the first sampling stage resulted in an overall completion rate of 67 percent. In the second sampling stage, nonrespondents from the first stage were subsampled by selecting every third occupied SLU which had not resulted in an initial interview (a reassignment of 330 SLU's). The completion rate achieved from this stage raised the overall effective completion rate to 82 percent.

Appendix table 1 shows the completion rates which are based on the 3,120 SLU's assigned to the field, minus unoccupied dwellings (120 additional SLU's resulted from new housing starts in designated cluster areas).

Appendix table 1--Completion rates based on Sample Listing Units, 1974

Item	Total		SMSA's 1,000,000 and over		Other SMSA's		Nonmetropolitan area	
	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.
Total assigned SLU's	3,120	--	1,198	--	875	--	1,047	--
Unoccupied dwellings	70	--	30	--	18	--	22	--
Total occupied SLU's	3,050	100	1,168	100	857	100	1,025	100
Completed interviews (1st stage)	2,044	67	709	61	627	73	708	69
Completed interviews (2nd stage) 1/	153		58		36		59	
Completed interviews (1st stage plus weighted 2nd stage) 1/	2,503	82	833	76	735	86	855	86

1/ Completed interviews from the subsample in the second stage were weighted by a factor of 3 and added to the completed interviews of the first sampling stage.

Sampling Reliability

The extent to which sample results may differ from true figures for the population depends on a number of factors. Chief among these are the size of the sample and the size of the reported survey percentages. The size of sampling fluctuations is also affected by the way in which PSU's are defined and selected and how widely scattered the sample is. The possible magnitudes of these chance sampling fluctuations are estimated on an approximate basis in the tabulation below:

Approximate confidence limits 1/

For percentages around--	Total sample (2,200)	Size of subgroup sample (unweighted)				
		1,000	800	600	400	200
		Percent				
50	2.76	4.37	4.90	5.64	6.92	9.80
40-60	2.76	4.29	4.78	5.53	5.78	9.58
30-70	2.76	4.00	4.49	5.17	6.35	8.98
20-80	1.96	3.49	3.92	4.51	5.53	7.84
10-90	1.96	2.63	3.94	3.43	4.16	5.88

1/ Two standard errors.

The chances are approximately 95 in 100 that the survey result does not vary, plus or minus, by more than the indicated amount from the result that would have been obtained had the same procedures been used to interview all homemakers in the population. For example, 49 percent of all homemakers in the survey said that they had cooked a fresh pork roast in the past 12 months. The chances are 95 in 100 that, had all homemakers in the population been interviewed, the true percentage of those cooking a fresh pork roast in the past 12 months would be between 46.2 and 51.8 percent. The possible variation is larger for a corresponding portion than for the total sample because the number of interviews is smaller.

This survey had a nonresponse rate of 18 percent. To the extent that the nonresponse group differs from those responding, the confidence limits as set forth in this section are understated. The confidence levels are correct and valid if the assumption is made that there is no measurable difference between respondents and nonrespondents.

Explanation of Appendix Tables

Tables are presented in the order of questioning, except in a few instances where similar questions have been grouped for ready comparison. Generally, the wording used in the ordered question, probes excluded, is given as the table heading. Tables are identified by the numbers of the questions on which they are based.

Question 1: "Have you prepared hamburgers or ground meat patties in the past 12 months?"

Respondent characteristics	Prepared	Did not prepare	Cases
	------- Percent -------		Number
U.S. total	95	5	2,503
Age:			
Under 30	96	4	537
30 to 49	97	3	940
50 to 64	94	6	612
65 and over	89	11	369
Education:			
Grade school or less	89	11	413
Some high school	95	5	464
High school graduate	97	3	1,005
Any college	96	4	583
Family income:			
Under $3,000	86	14	256
$3,000 to $5,999	94	6	367
$6,000 to $9,999	95	5	493
$10,000 to $14,999	97	3	712
$15,000 and over	96	4	605

Question 2: "About how many times in the past 12 months have you prepared hamburgers?" (Asked only of those respondents who prepared hamburger or ground meat patties in the past 12 months.)

Frequency	U.S. total
	Percent
Once a week or more often	56
2 to 3 times a month	26
Once a month	10
5 to 6 times a year	3
3 to 4 times a year	3
1 to 2 times a year	1
No answer	1
	Number
Cases	2,374

Question 3: "The last time you prepared hamburgers, how did you cook them?" (Asked only of those respondents who prepared hamburger or ground meat patties in the past 12 months.)

Respondent characteristics	Low risk			High risk			No answer	Cases
	Total	Medium	Well-done	Total	Rare	Medium-rare		
	Percent							Number
U.S. total	86	32	56	15	4	12	1	2,374
Education:								
Grade school or less	91	26	67	10	4	6	1	366
Some high school	88	22	67	14	3	10	0	442
High school graduate	88	36	54	14	3	11	1/	972
Any college	80	38	44	23	6	18	1	561
Family income:								
Under $3,000	85	29	56	16	4	12	1	220
$3,000 to $5,999	91	31	61	9	2	7	1	345
$6,000 to $9,999	88	27	63	14	3	12	1/	470
$10,000 to $14,999	87	31	57	14	2	12	1	692
$15,000 and over	82	39	46	21	7	14	1/	582
Region:								
Northeast	82	36	49	20	5	15	1	596
North Central	86	32	55	16	3	13	1	640
South	93	29	65	9	3	6	1/	709
West	83	33	51	20	5	15	0	429
Community size:								
Metro areas--1 million and over	80	32	50	22	6	16	1/	837
Other metro	87	34	55	14	3	12	1	700
Nonmetro	92	31	63	10	3	7	1	837

1/ Less than 0.5 percent.

Question 4a: "Have you roasted a beef roast in the oven in the past 12 months? We do not mean a pot roast."

Respondent characteristics	Prepared	Did not prepare	Cases
	------- Percent -------		Number
U.S. total	73	27	2,503
Age:			
Under 30	69	31	537
30 to 49	79	21	940
50 to 64	74	26	612
65 and over	61	39	369
Education:			
Grade school or less	57	43	413
Some high school	73	27	464
High school graduate	75	25	1,005
Any college	82	18	583
Family income:			
Under $3,000	46	54	256
$3,000 to $5,999	65	35	367
$6,000 to $9,999	69	31	493
$10,000 to $14,999	80	20	712
$15,000 and over	85	15	605

Question 4b: "About how many times in the past 12 months have you prepared a beef roast?" (Asked only of those respondents who roasted a beef roast in the oven in the past 12 months.)

Frequency	U.S. total
	Percent
Once a week or more often	15
2 to 3 times a month	27
Once a month	24
5 to 6 times a year	13
3 to 4 times a year	11
1 to 2 times a year	9
No answer	1
	Number
Cases	1,823

Question 5a: "The last time you prepared a beef roast, about how soon after you finished cooking it did you serve it?" (Asked only of those respondents who roasted a beef roast in the oven in the past 12 months.)

Length of time	U.S. total
	Percent
Not over 2 hours	96
30 minutes or less	87
31 minutes to 1 hour	6
Over 1 hour to 2 hours	3
Over 2 hours	4
	Number
Cases	1,823

Question 5b: "Where did you keep the beef roast during this time?" (Asked only of those respondents who reported more than one hour's time lag between cooking and serving the last beef roast prepared.)

Location	U.S. total
	Percent
At room temperature	77
Stove top	32
Warm oven	27
Counter, tabletop	18
Refrigerator	21
Other mentions	2
No answer	3
	Number
Cases	126

Question 6a: "The last time you cooked a beef roast did you have any left over after that first meal?" (Asked only of those respondents who roasted a beef roast in the oven in the past 12 months.)

Response	U.S. total
	Percent
Had beef roast leftovers	87
Did not have beef roast leftovers	13
	Number
Cases	1,823

Question 6b: "Where did you put the leftover beef roast this last time?" (Asked only of those respondents who reported having beef roast leftovers.)

Location	U.S. total
	Percent
Refrigerator	92
Freezer	6
Counter or table	4
Warm oven or stove top	2
	Number
Cases	1,578

Questions 6c,d: "About how much time elapsed between the time you first served the beef roast and the time the leftovers were stored/eaten?" (Asked only of those respondents who reported having beef roast leftovers.)

Length of time	U.S. total
	Percent
Not over 2 hours	89
30 minutes or less	30
31 minutes to 1 hour	46
Over 1 hour to 2 hours	13
Over 2 hours	10
Over 2 hours to 4 hours	5
Over 4 hours	5
No answer	1
	Number
Cases	1,578

Questions 5a, 6c,d: Total combined time beef roast was at room temperature after cooking until storage. (Asked only of those respondents who roasted a beef roast in the oven in the past 12 months.)

Respondent characteristics	Not over 2 hours			Over 2 hours			Cases
	Total	1 hour or less	Over 1 hour to 2 hours	Total	Over 2 hours to 4 hours	Over 4 hours	
	Percent						Number
U.S. total	82	37	45	18	12	6	1,823
Region:							
Northeast	81	38	43	19	12	7	464
North Central	88	39	49	12	9	3	513
South	74	33	41	26	15	11	499
West	83	35	48	17	13	4	347
Aware of facts:							
Total	89	45	44	12	6	6	408
High risk	81	42	39	19	10	9	243
Low risk	100	49	51	0	0	0	165
Not aware of facts:							
Total	80	34	46	20	13	7	1,415
High risk	71	28	43	29	19	10	984
Low risk	100	48	52	0	0	0	431

Question 6e: "About how long did you store the leftover beef roast in the refrigerator?" (Asked only of those respondents who said they stored leftover beef roast in the refrigerator.)

Length of time	U.S. total
	Percent
1 to 2 days	76
3 to 4 days	16
5 to 7 days	5
8 to 14 days	1
Over 2 weeks	1
No answer	1
	Number
Cases	1,457

Question 7a: "Have you cooked a fresh pork roast in the past 12 months?"

Respondent characteristics	Cooked	Did not cook	Cases
	------ Percent ------		Number
U.S. total	49	51	2,503
Age:			
Under 30	44	56	537
30 to 49	56	44	940
50 to 64	48	52	612
65 and over	39	61	369
Education:			
Grade school or less	40	60	413
Some high school	47	53	464
High school graduate	51	49	1,005
Any college	54	46	583
Region:			
Northeast	53	47	639
North Central	59	41	664
South	40	60	750
West	41	59	450
Family income:			
Under $3,000	26	74	256
$3,000 to $5,999	45	55	367
$6,000 to $9,999	51	49	493
$10,000 to $14,999	52	48	712
$15,000 and over	56	44	605

Question 7b: "About how many times in the past 12 months have you prepared a fresh pork roast?" (Asked only of those respondents who cooked a fresh pork roast in the past 12 months.)

Frequency	U.S. total
	Percent
Once a week or more often	5
2 to 3 times a month	12
Once a month	19
5 to 6 times a year	19
3 to 4 times a year	19
1 to 2 times a year	26
	Number
Cases	1,218

Question 8a: "How did you cook the fresh pork roast the last time you cooked one?" (Asked only of those respondents who cooked a fresh pork roast in the past 12 months.)

Method	U.S. total
	Percent
Low risk	99
Well-done	92
Medium	7
High risk (medium-rare)	1
	Number
Cases	1,218

Question 8b: "How were you able to tell when the pork roast was done the way you wanted it? What exactly did you look for?" (Asked only of those respondents who said they cooked their last pork roast medium.)

Method	U.S. total
	Percent
Time reference	38
Cut it to see if tender, soft, done	30
Color of meat is not pink, meat is white, gray	16
Meat thermometer	11
Outside appearance, brownness, crispy	8
No blood running, no pink juices	4
Taste it	2
Other mentions	8
No answer	1
	Number
Cases	84

Question 9a: "The last time you prepared a fresh pork roast, about how soon after you finished cooking it did you serve it?" (Asked only of those respondents who cooked a fresh pork roast in the past 12 months.)

Length of time	U.S. total
	Percent
Not over 2 hours	96
30 minutes or less	87
31 minutes to 1 hour	6
Over 1 hour to 2 hours	3
Over 2 hours	3
No answer	1
	Number
Cases	1,218

Question 9b: "Where did you keep the pork roast during this time?" (Asked only of those respondents who reported more than one hour's time lag between cooking and serving the last pork roast prepared.)

Location	U.S. total
	Percent
At room temperature	70
Stove top	33
Warm oven	19
Counter, tabletop	18
Refrigerator	18
Other mentions	2
No answer	14
	Number
Cases	63

Question 10a: "The last time you cooked a pork roast did you have any left over after that first meal?" (Asked only of those respondents who cooked a fresh pork roast in the past 12 months.)

Response	U.S. total
	Percent
Had pork roast leftovers	73
Did not have pork roast leftovers	26
No answer	1
	Number
Cases	1,218

Question 10b: "Where did you put the leftover pork roast this last time?" (Asked only of those respondents who reported having pork roast leftovers.)

Location	U.S. total
	Percent
Refrigerator	94
Counter or table	7
Freezer	4
Warm oven or stove top	2
No answer	1
	Number
Cases	894

Questions 10c,d: "About how much time elapsed between the time you first served the pork roast and the time the leftovers were stored?" (Asked only of those respondents who reported having pork roast leftovers.)

Length of time	U.S. total
	Percent
Not over 2 hours	89
30 minutes or less	32
31 minutes to 1 hour	46
Over 1 hour to 2 hours	11
Over 2 hours	9
Over 2 hours to 4 hours	5
Over 4 hours	4
No answer	2
	Number
Cases	894

Questions 9a, 10c,d: Total combined time pork roast was at room temperature after cooking until storage. (Asked only of those respondents who cooked a fresh pork roast in the past 12 months.)

Respondent characteristics	Not over 2 hours			Over 2 hours			Cases
	Total	1 hour or less	Over 1 hour to 2 hours	Total	Over 2 hours to 4 hours	Over 4 hours	
	Percent						Number
U.S. total	86	48	38	14	9	5	1,218
Age:							
Under 30	87	51	36	13	10	3	234
30 to 49	86	51	35	14	10	4	525
50 to 64	84	42	42	16	10	6	294
65 and over	82	40	42	18	13	5	143
Region:							
Northeast	88	49	39	12	8	4	338
North Central	90	48	42	10	7	3	394
South	77	47	30	23	15	8	303
West	87	46	41	13	9	4	183
Education:							
Grade school or less	81	46	35	19	11	8	166
Some high school	82	44	38	18	14	4	220
High school graduate	86	50	36	14	10	4	509
Any college	91	48	43	9	5	4	315
Family income:							
Under $3,000	79	48	31	21	13	8	67
$3,000 to $5,999	84	39	45	16	12	4	165
$6,000 to $9,999	84	49	35	16	11	5	250
$10,000 to $14,999	86	49	37	14	9	5	371
$15,000 and over	90	50	40	10	8	2	337

Question 10e: "About how long did you store the leftover pork roast in the refrigerator?" (Asked only of those respondents who said they stored leftover pork roast in the refrigerator.)

Length of time	U.S. total
	Percent
1 to 2 days	79
3 to 4 days	15
5 to 7 days	4
8 to 14 days	1
No answer	1
	Number
Cases	842

Question 11a: "Have you prepared a whole turkey in the past 12 months?"

Respondent characteristics	Prepared	Did not Prepare	No Answer	Cases
	-------- Percent --------			Number
U.S. total	60	40	1/	2,503
Age:				
Under 30	48	52	1/	537
30 to 49	73	27	1/	940
50 to 64	65	34	1	612
65 and over	36	64	0	369
Education:				
Grade school or less	44	56	1/	413
Some high school	60	39	1	464
High school graduate	62	38	1/	1,005
Any college	67	33	1/	583
Region:				
Northeast	66	34	1/	639
North Central	57	42	1	664
South	53	47	1/	750
West	66	34	1/	450
Family income:				
Under $3,000	30	70	0	256
$3,000 to $5,999	47	53	1/	367
$6,000 to $9,999	57	43	1/	493
$10,000 to $14,999	68	32	1/	712
$15,000 and over	73	26	1	605
High risk:				
Total	69	31	1/	1,570
Aware	70	30	1/	321
Not aware	68	31	1	1,249
Low risk:				
Total	45	55	1/	933
Aware	56	44	1/	237
Not aware	41	59	0	696
Community size:				
Metro areas--1 million and over	64	36	1/	895
Other metro	61	38	1	730
Nonmetro	55	45	1/	878

1/ Less than 0.5 percent.

Question 11b: "About how many times in the past 12 months have you prepared a whole turkey?" (Asked only of those respondents who prepared a whole turkey in the past 12 months.)

Frequency	U.S. total
	Percent
1 to 2 times a year	72
3 to 4 times a year	18
5 to 6 times a year	6
Once a month	2
2 to 3 times a month	1
Once a week or more often	1
	Number
Cases	1,493

Questions 12a,b: "Think for a moment about the last whole turkey you cooked. Was the turkey already stuffed when you bought it? Did you fix stuffing with it?" (Asked only of those respondents who prepared a whole turkey in the past 12 months.)

Response	U.S. total
	Percent
Served stuffing	89
Turkey was not prestuffed	99
Fixed own stuffing	88
Did not fix own stuffing	11
Turkey was prestuffed	1
Did not serve stuffing	11
	Number
Cases	1,493

Question 13a: "Did you cook the stuffing or dressing inside the turkey or did you cook it in a separate container?" (Percents based on total number of respondents who prepared a whole turkey in the past 12 months.)

Respondent characteristics	Served stuffing				Did not serve stuffing	Cases
	Total	Cooked stuffing inside turkey	Cooked stuffing in separate container	Did it both ways		
	Percent					Number
U.S. total	89	66	23	17	11	1,493
Region:						
Northeast	88	75	13	11	12	419
North Central	93	72	21	18	7	384
South	83	40	43	17	17	396
West	92	77	15	25	8	294

Question 13b: "Did you stuff the turkey a day or more in advance or just before roasting?" (Asked only of those respondents who cooked the stuffing inside the turkey.)

Respondent characteristics	Stuffed just before roasting	Stuffed in advance	Turkey Commercially Stuffed	No answer	Cases
	Percent				Number
U.S. total	92	6	2	1	978
Community size:					
Metro areas--1 million and over	89	8	3	0	401
Other metro	90	8	2	1	312
Nonmetro	97	2	1/	1	265
High risk behavior:					
Total	89	9	2	1/	708
Aware of food safety rules	94	3	2	1	146
Not aware of food safety rules	88	10	2	1/	562
Low risk behavior:					
Total	98	0	1	1	270
Aware of food safety rules	99	0	1	0	84
Not aware of food safety rules	97	0	1	2	186

1/ Less than 0.5 percent.

Question 13c: "Did you pack the stuffing tightly or loosely?" (Asked only of those respondents who stuffed their own turkey.)

Respondent characteristics	Packed tightly	Packed loosely	No answer	Cases
	Percent			Number
U.S. total	40	59	1	961
Age:				
Under 30	63	36	1	169
30 to 49	40	60	1/	435
50 to 64	30	69	1	252
65 and over	27	72	1	85
Education:				
Grade school or less	40	60	0	113
Some high school	50	46	4	169
High school graduate	42	58	8	413
Any college	31	69	0	260
Family income:				
Under $3,000	46	46	8	52
$3,000 to $5,999	46	54	0	93
$6,000 to $9,999	47	52	1	178
$10,000 to $14,999	43	57	1/	306
$15,000 and over	32	68	3	303

1/ Less than 0.5 percent.

Question 14a: "At about what temperature did you set the oven for the turkey?" (Asked only of those respondents who prepared a whole turkey in the past 12 months.)

Temperature	U.S. total
	Percent
400°F. and over	9
375°F.	8
350°F.	38
325°F.	27
300°F.	9
275°F.	1
250°F. and below	5
No answer	3
	Number
Cases	1,493

Question 14b: "Did you cook it completely at one time or did you partially cook it and then complete the cooking at a later time?" (Asked only of those respondents who prepared a whole turkey in the last 12 months.)

Response	U.S. total
	Percent
At one time	96
Partially	3
No answer	1
	Number
Cases	1,493

Question 14c: "How did you tell when the turkey was done the way you wanted it?" (Asked only of those respondents who prepared a whole turkey in the past 12 months.)

Respondent characteristics	Condition of leg	Cooked it so many minutes per pound	Condition of unspecified meat area	Meat thermometer	Condition of breast	No pink, red juices	No pink, red meat	Turkey was brown, crispy	Tasted it	Other mentions	No answer	Cases
	Percent											Number
U.S. total	39	29	27	19	10	7	3	2	2	3	1/	1,493
Age:												
Under 30	24	30	30	20	8	10	7	2	5	6	0	257
30 to 49	41	31	26	19	11	6	3	2	1	3	1/	681
50 to 64	43	27	25	17	9	7	2	3	1	3	1	397
65 and over	40	26	32	19	10	4	2	4	2	2	0	132
Education:												
Grade school or less	26	16	41	9	9	7	2	4	2	2	2	180
Some high school	26	26	41	15	9	9	4	2	3	4	0	281
High school graduate	39	32	25	16	13	6	4	2	2	4	0	626
Any college	54	32	15	28	6	7	3	2	2	2	1/	387
Family income:												
Under $3,000	28	15	46	12	9	13	3	3	1	1	0	76
$3,000 to $5,999	32	21	35	15	14	6	5	5	4	4	0	171
$6,000 to $9,999	33	22	31	14	9	5	5	3	3	6	0	281
$10,000 to $14,999	40	32	28	16	10	5	3	2	2	2	1/	481
$15,000 and over	44	36	18	27	10	9	3	2	1	1	0	446
Community size:												
Metro areas--1 million and over	38	30	26	23	7	9	4	2	1	3	0	566
Other metro	45	33	24	20	12	7	3	2	2	2	0	447
Nonmetro	34	25	32	13	12	5	3	3	2	4	1	480
Aware of facts:												
Total	44	32	20	20	11	7	3	3	1	3	0	359
High risk	44	32	21	20	11	7	4	4	1	2	0	226
Low risk	43	31	19	20	11	7	2	2	2	4	0	133
Not aware of facts:												
Total	37	28	29	18	9	7	3	2	2	3	1/	1,134
High risk	37	29	29	17	10	7	4	2	2	3	1	851
Low risk	39	27	30	20	7	5	2	1	2	3	0	283

1/Less than 0.5 percent.

Question 15: "How did you know when the stuffing was done?" (Asked only of those respondents who cooked the stuffing inside the turkey.)

Response	U.S. total
	Percent
When turkey is done, the stuffing is done	67
Cooked the ingredients first . . . (onion, celery, sausage, vegetables)	14
Taste it to see if done	7
Cook it a certain amount of time; follow cookbook; knew length of time cooked	2
Tell by onions and celery--if they are tender, soft	2
When stuffing browned	1
Other mentions	4
No answer	2
	Number
Cases	978

Question 16a: "About how soon after you finished cooking the turkey did you serve it?" (Asked only of those respondents who prepared a whole turkey in the past 12 months.)

Length of time	U.S. total
	Percent
Not over 2 hours	93
30 minutes or less	73
31 minutes to 1 hour	15
Over 1 hour to 2 hours	5
Over 2 hours	7
	Number
Cases	1,493

Question 16b: "Where did you keep the turkey during this time?" (Asked only of those respondents who reported more than one hour's time lag between cooking and serving the last whole turkey prepared.)

Location	U.S. total
	Percent
At room temperature	75
Stove top	29
Warm oven	27
Counter, tabletop	20
Refrigerator	17
Other mentions	7
No answer	1
	Number
Cases	179

Question 16c: "Did you keep the stuffing in the turkey until you served it?" (Asked only of those respondents who cooked the stuffing inside the turkey.)

Respondent characteristics	Stored stuffing inside turkey	Did not store stuffing inside turkey	No answer	Cases
	Percent			Number
U.S. total	70	29	1	978
Age:				
Under 30	62	36	2	173
30 to 49	69	30	1	445
50 to 64	75	25	1/	254
65 and over	80	20	0	86
Education:				
Grade school or less	84	13	3	115
Some high school	72	27	1	172
High school graduate	68	31	1	419
Any college	65	34	1	266
Family income:				
Under $3,000	89	11	0	53
$3,000 to $5,999	76	22	2	97
$6,000 to $9,999	76	23	1	180
$10,000 to $14,999	66	33	1	310
$15,000 and over	65	34	1	309
Community size:				
Metro areas--1 million and over	66	33	1	401
Other metro	64	35	1	312
Nonmetro	83	16	1	265

1/ Less than 0.5 percent.

Question 17a: "Was any of the turkey left over after the first meal?" (Asked only of those respondents who prepared a whole turkey in the past 12 months.)

Response	U.S. total
	Percent
Had turkey leftovers	93
Did not have turkey leftovers	6
No answer	1
	Number
Cases	1,493

Question 17b: "Where did you put the leftover turkey this last time?" (Asked only of those respondents who reported having leftover turkey.)

Respondent characteristics	Refrigerator	Freezer	Counter or table	Warm oven or stove top	Other	Cases
	Percent					Number
U.S. total	85	22	6	2	1/	1,392
Age:						
Under 30	87	18	6	3	1/	240
30 to 49	87	19	5	2		645
50 to 64	84	27	8	1	0	365
65 and over	73	32	9	3	1	119
Region:						
Northeast	91	16	7	1	0	396
North Central	81	28	10	2	1/	358
South	81	23	3	4	0	361
West	87	22	4	1	1	277
Family income:						
Under $3,000	93	15	5	2	0	67
$3,000 to $5,999	78	25	5	4	1	148
$6,000 to $9,999	81	24	7	2	0	260
$10,000 to $14,999	86	22	5	2	0	456
$15,000 and over	89	21	8	1	1/	426
Aware of facts:						
Total	84	27	6	1	1/	329
High risk	85	27	6	1	0	212
Low risk	81	27	5	1	1	117
Not aware of facts:						
Total	86	21	6	2	1/	1,063
High risk	85	20	7	3	1/	803
Low risk	86	22	4	1/	1/	260

1/ Less than 0.5 percent.

Questions 17c,d: "About how much time elapsed between the time you first served the turkey and the time the leftovers were stored?" (Asked only of those respondents who reported having leftover turkey.)

Length of time	U.S. total
	Percent
Not over 2 hours	81
30 minutes or less	15
31 minutes to 1 hour	39
Over 1 hour to 2 hours	27
Over 2 hours	19
Over 2 hours to 4 hours	12
Over 4 hours	7
	Number
Cases	1,392

Questions 16a, 17c,d: Total combined time turkey was at room temperature after cooking until storage. (Asked only of those respondents who prepared a whole turkey in the past 12 months.)

Respondent characteristics	Not over 2 hours			Over 2 hours			Cases
	Total	1 hour or less	Over 1 hour to 2 hours	Total	Over 2 hours to 4 hours	Over 4 hours	
	Percent						Number
U.S. total	63	17	46	37	25	12	1,493
Region:							
Northeast	66	16	50	34	27	7	419
North Central	69	16	53	31	24	7	384
South	54	18	36	46	22	24	396
West	63	19	44	37	29	8	294
Community size:							
Metro areas--1 million and over	61	15	46	39	29	10	566
Other metro	68	15	53	32	21	11	447
Nonmetro	61	22	39	39	24	15	480
Aware of facts:							
Total	75	25	50	25	19	6	359
High risk	60	21	39	40	30	10	226
Low risk	100	33	67	0	0	0	133
Not aware of facts:							
Total	59	15	44	41	27	14	1,134
High risk	46	11	35	54	36	18	851
Low risk	100	25	75	0	0	0	283

Question 17e: "About how long did you store the leftover turkey in the refrigerator?" (Asked only of those respondents who said they stored leftover turkey in the refrigerator.)

Length of time	U.S. total
	Percent
1 to 2 days	52
3 to 4 days	29
5 to 7 days	13
8 to 14 days	2
Over 2 weeks	10
	Number
Cases	1,185

Question 18a: "Was any of the stuffing or dressing leftover after the first meal?" (Asked only of those respondents who cooked the stuffing inside the turkey and had leftover turkey.)

Response	U.S. total
	Percent
Had stuffing leftovers	73
Did not have stuffing leftovers	27
	Number
Cases	929

Question 18b: "Did you leave the stuffing or dressing inside the turkey or did you remove it and store it separately?" (Asked only of those respondents who had leftover stuffing.)

Response	U.S. total
	Percent
Stored separately	90
Left inside the turkey	10
	Number
Cases	673

Question 19a: "Have you prepared chicken for other than a chicken salad in the past 12 months?"

Response	U.S. total
	Percent
Prepared	95
Did not prepare	5
	Number
Cases	2,503

Question 19b: "About how many times in the past 12 months have you prepared chicken for other than a chicken salad?" (Asked only of those respondents who cooked chicken other than for a chicken salad in the past 12 months.)

Frequency	U.S. total
	Percent
Once a week or more often	49
2 to 3 times a month	25
Once a month	15
5 to 6 times a year	6
3 to 4 times a year	2
1 to 2 times a year	2
No answer	1
	Number
Cases	2,364

Question 20a: "Think about the last time you cooked chicken for other than a chicken salad. About how soon after you finished cooking this chicken did you serve it?" (Asked only of those respondents who cooked chicken other than for a chicken salad in the past 12 months.)

Length of time	U.S. total
	Percent
Not over 2 hours	96
30 minutes or less	90
31 minutes to 1 hour	4
Over 1 hour to 2 hours	2
Over 2 hours	3
No answer	1
	Number
Cases	2,364

Question 20b: "Where did you keep the chicken during this time?" (Asked only of those respondents who reported more than one hour's time lag between cooking and serving the last chicken they prepared--chicken for other than a chicken salad.)

Location	U.S. total
	Percent
At room temperature	60
Stove top	43
Counter, tabletop	9
Warm oven	8
Refrigerator, freezer	26
Refrigerator	23
Freezer	3
Other	13
No answer	4
	Number
Cases	106

Question 21a: "Was any of the chicken left over after that first meal?" (Asked only of those respondents who cooked chicken other than for a chicken salad in the past 12 months.)

Response	U.S. total
	Percent
Had chicken leftovers	55
Did not have chicken leftovers	43
No answer	2
	Number
Cases	2,364

Question 21b: "Where did you put the leftover chicken this last time?" (Asked only of those respondents who reported having chicken leftovers.)

Location	U.S. total
	Percent
Refrigerator	90
Counter or table	7
Warm oven or stove top	5
Freezer	2
	Number
Cases	1,301

Questions 21c,d: "About how much time elapsed between the time you first served the chicken and the time the leftovers were stored?" (Asked only of those respondents who reported having chicken leftovers.)

Length of time	U.S. total
	Percent
Not over 2 hours	86
30 minutes or less	33
31 minutes to 1 hour	43
Over 1 hour to 2 hours	10
Over 2 hours	12
Over 2 hours to 4 hours	6
Over 4 hours	6
No answer	2
	Number
Cases	1,301

Questions 20a, 21c,d: Total combined time chicken was at room temperature after cooking until storage. (Asked only of those respondents who cooked chicken other than for a chicken salad in the past 12 months.)

Respondent characteristics	Not over 2 hours			Over 2 hours			Cases
	Total	1 hour or less	Over 1 hour to 2 hours	Total	Over 2 hours to 4 hours	Over 4 hours	
	Percent						Number
U.S. total	87	61	26	13	8	5	2,364
Region:							
Northeast	88	64	24	12	7	5	616
North Central	90	58	32	10	6	4	623
South	84	64	20	16	9	7	701
West	89	58	31	11	7	4	424
Aware of facts:							
Total	92	65	27	8	4	4	531
High risk	86	63	23	14	8	6	307
Low risk	100	68	32	0	0	0	224
Not aware of facts:							
Total	86	60	26	14	8	6	1,833
High risk	79	56	23	21	12	9	1,203
Low risk	100	68	32	0	0	0	630

Question 21e: "About how long did you store the leftover chicken in the refrigerator?" (Asked only of those respondents who said they stored leftover chicken in the refrigerator.)

Length of time	U.S. total
	Percent
1 to 2 days	81
3 to 4 days	13
5 to 7 days	3
8 to 14 days	1
Over 2 weeks	1
No answer	1
	Number
Cases	1,173

Question 22a: "When you serve leftover gravy do you cook it so it is warm, hot but not simmering, simmering or boiling?"

Respondent characteristics	Low risk			High risk			Don't serve gravy	No answer	Cases
	Total	Simmering	Boiling	Total	Hot but not simmering	Warm			
	Percent								Number
U.S. total	33	17	16	24	17	7	42	1	2,503
Region:									
Northeast	33	20	13	34	25	9	32	1	639
North Central	41	18	23	23	16	7	36	1/	664
South	25	14	11	19	12	7	55	1	750
West	38	19	19	19	15	4	42	1	450
Education:									
Grade school or less	26	10	16	25	13	12	48	1	413
Some high school	32	18	14	26	17	9	42	1/	464
High school graduate	34	17	17	27	21	6	38	1	1,005
Any college	39	22	17	17	13	4	43	1	583
Aware of facts:									
Total	38	16	22	20	14	6	41	1	558
High risk	37	18	19	20	13	7	42	1	321
Low risk	40	14	26	19	13	6	41	1/	237
Not aware of facts:									
Total	32	18	14	25	18	7	42	1	1,945
High risk	34	19	15	26	19	6	39	1	1,249
Low risk	29	15	14	24	15	9	46	1	696

1/ Less than 0.5 percent.

Question 22b: "About how long would you cook it that way?" (Asked only of those respondents who said they cook leftover gravy so that it is "simmering" or "boiling.")

Length of time	U.S. total
	Percent
Under 30 seconds	7
30 seconds to 1 minute 59 seconds	13
2 minutes to 4 minutes	28
5 minutes to 9 minutes	27
10 minutes to 14 minutes	13
15 minutes and longer	11
No answer	1
	Number
Cases	840

Question 23a: "In the past 12 months have you prepared tuna fish salad, turkey salad, chicken salad or egg salad sandwiches which were taken for work or school lunches?"

Respondent characteristics	Did not prepare	Prepared	No Answer	Cases
	-------- Percent --------			Number
U.S. total	65	34	1	2,503
Community size:				
Metro areas--1 million and over	61	38	1	895
Other metro	61	38	1	730
Nonmetro	71	28	1	878
Experienced any illness:				
Total	55	44	1	370
At home	48	51	1	141
Away from home	62	37	1	189
Age:				
Under 30	50	49	1	537
30 to 49	61	39	1/	940
50 to 64	70	28	2	612
65 and over	88	11	1	369
Education:				
Grade school or less	80	19	1	413
Some high school	69	30	1	464
High school graduate	58	41	1	1,005
Any college	60	39	1	583
Family income:				
Under $3,000	85	14	1	256
$3,000 to $5,999	77	22	1	367
$6,000 to $9,999	64	35	1	493
$10,000 to $14,999	56	43	1	712
$15,000 and over	60	40	1/	605
Region:				
Northeast	59	40	1	639
North Central	70	29	1	664
South	67	32	1	750
West	60	39	1	450

1/ Less than 0.5 percent.

Question 23b: "About how many times in the past 12 months have you prepared salad sandwiches for work or school lunches?" (Asked only of those respondents who prepared tuna fish salad, turkey salad, chicken salad, or egg salad sandwiches in the past 12 months for work or school lunches.)

Frequency	U.S. total
	Percent
Once a week or more often	42
2 to 3 times a month	21
Once a month	15
5 to 6 times a year	7
3 to 4 times a year	6
1 to 2 times a year	9
	Number
Cases	861

Question 23c: "Which kind did you prepare last?" (Asked only of those respondents who prepared tuna fish salad, turkey salad, chicken salad, or egg salad sandwiches in the past 12 months for work or school lunches.)

Sandwiches	U.S. total
	Percent
Tuna fish salad	67
Egg salad	22
Chicken salad	9
Turkey salad	2
	Number
Cases	861

Question 24c: Total combined time salad for salad sandwiches was left at room temperature, between preparation and eating. (Asked only of those respondents who prepared tuna fish salad, turkey salad, chicken salad, or egg salad sandwiches in the past 12 months for work or school lunches.)

Respondent characteristics	Over 2 hours							Not over 2 hours			Cases
	Total	Over 2 hours to 3 hours	Over 3 hours to 4 hours	Over 4 hours to 5 hours	Over 5 hours to 10 hours	Over 10 hours to 23 hours	1 day or longer	Total	1 hour or less	Over 1 hour to 2 hours	
	Percent										Number
U.S. total	85	9	19	13	9	16	19	15	13	2	861
Community size:											
Metro areas--1 million and over	88	12	16	13	11	20	16	12	10	2	337
Other metro	88	8	20	15	9	19	17	12	11	1	277
Nonmetro	78	7	19	9	8	10	25	22	19	3	247
Age:											
Under 30	85	9	12	11	11	21	21	15	12	3	265
30 to 49	89	11	23	15	8	18	14	11	10	1	370
50 to 64	84	6	22	11	13	9	23	16	14	2	171
65 and over	67	10	7	7	5	14	24	33	28	5	42
Family income:											
Under $3,000	74	9	33	6	3	9	14	26	26	0	35
$3,000 to $5,999	68	11	7	10	9	11	20	32	29	3	81
$6,000 to $9,999	85	13	14	12	13	15	18	15	13	2	173
$10,000 to $14,999	89	9	17	15	12	18	18	11	9	2	307
$15,000 and over	89	7	25	12	5	20	20	11	8	3	240

Question 25: "People differ in the ways they go about preparing meals. Imagine that you are chopping fresh meat for a stew and vegetables for a fresh salad with the same knife and cutting board. Which one statement . . . best describes the way you would go about preparing this meal?"

Respondent characteristics	After cutting up the fresh meat, I would rinse off the knife, the cutting board, and my hands and then chop the fresh vegetables	After cutting up the fresh meat, I would wash the knife, the cutting board, and my hands with soap and water and then chop the fresh vegetables	After cutting up the fresh meat, I would chop the fresh vegetables and then wash the knife, the cutting board, and my hands with soap and water	No answer	Cases
	Percent				Number
U.S. total	50	38	10	2	2,503
Community size:					
Metro areas--1 million and over	50	34	13	3	895
Other metro	50	39	10	1	730
Nonmetro	46	43	9	2	878
Region:					
Northeast	48	34	14	4	639
North Central	48	38	12	2	664
South	46	46	7	1	750
West	56	34	8	2	450

Question 26: "Let's suppose you are fixing food for a picnic and you have no way to keep it very hot or very cold once you leave home. You will eat the food about 3 hours after leaving home. Would you avoid fixing (food) because it might become unsafe to eat in 3 hours if not kept very hot or very cold?"

Respondent characteristics	Would avoid									Cases
	Cream or custard pie	Chicken salad, tuna salad, or egg salad sandwiches	Luncheon meats on a platter	Cole slaw	Potato salad	Deviled eggs	Baked ham	Roast beef	Fried chicken	
	Percent									Number
U.S. total	79	74	67	64	63	61	33	33	27	2,503
Age:										
Under 30	78	65	60	69	59	66	34	39	24	537
30 to 49	80	75	67	64	65	64	37	32	26	940
50 to 64	80	79	71	60	66	58	30	29	27	612
65 and over	76	73	66	60	58	52	27	37	31	369
Education:										
Grade school or less	68	70	67	56	50	48	28	34	26	413
Some high school	75	72	69	62	57	52	28	34	18	464
High school graduate	82	75	69	66	67	68	34	32	26	1,005
Any college	86	76	61	67	71	67	37	33	35	583
Region:										
Northeast	88	70	64	67	64	69	38	38	32	639
North Central	87	82	73	65	70	67	35	33	32	664
South	65	78	68	63	62	54	26	32	18	750
West	77	62	57	56	52	54	33	27	25	450
Family income:										
Under $3,000	68	68	58	56	54	46	22	29	26	256
$3,000 to $5,999	72	71	70	55	52	54	31	38	23	367
$6,000 to $9,999	76	73	67	61	59	57	30	35	27	493
$10,000 to $14,999	83	76	70	66	66	65	38	34	27	712
$15,000 and over	86	77	63	70	72	70	35	31	28	605
Community size:										
Metro areas--1 million and over	83	70	63	65	64	65	37	34	25	895
Other metro	80	73	68	65	64	64	34	33	31	730
Nonmetro	74	78	69	60	61	55	27	33	24	878
Aware of facts:										
Total	84	80	75	72	69	69	41	42	41	558
High risk	80	76	73	70	67	65	36	38	38	321
Low risk	89	85	77	74	73	73	47	48	46	237
Not aware of facts:										
Total	78	72	64	61	61	59	30	31	22	1,945
High risk	77	68	61	62	60	59	30	31	21	1,245
Low risk	80	80	69	60	62	59	32	31	25	696

Questions 27 and 52a: "We would like to know at what temperature homemakers keep their refrigerators. Would you please put this thermometer in your refrigerator now, and at the end of the interview we can check it. Please put it on the middle shelf of the refrigerator--do not put it in the freezer compartment." (At the end of the interview.) "Now, can we read the thermometer that we placed in your refrigerator earlier? Please take the thermometer from the refrigerator and hand it to me."

Respondent characteristics	35° F. and under	36°-40° F.	41°-44° F.	45° F.	46°-50° F.	51° F. and over	No answer	Cases
	Percent							Number
U.S. total	14	35	14	16	12	5	4	2,503
Region:								
Northeast	10	29	13	18	15	6	9	639
North Central	17	41	15	14	7	3	3	664
South	14	35	13	17	13	6	2	750
West	14	40	16	11	10	5	4	450
Family income:								
Under $3,000	11	32	10	17	14	11	5	256
$3,000 to $5,999	15	30	14	15	16	6	4	367
$6,000 to $9,999	9	34	17	16	13	6	5	493
$10,000 to $14,999	17	36	14	15	9	4	5	712
$15,000 and over	14	40	14	16	10	3	3	605
Education:								
Grade school or less	9	36	10	17	17	7	4	413
Some high school	13	35	14	13	13	9	3	464
High school graduate	15	34	17	15	10	4	5	1,005
Any college	16	37	14	17	10	3	3	583

Question 28: "Do you use a dishwasher in your home?"

Respondent characteristics	Do not use	Use	No answer	Cases
	------- Percent -------			Number
U.S. total	71	27	2	2,503
Age:				
Under 30	78	20	2	537
30 to 49	62	37	1	940
50 to 64	70	28	2	612
65 and over	85	12	3	369
Education:				
Grade school or less	89	7	4	413
Some high school	82	17	1	464
High school graduate	69	30	1	1,005
Any college	55	44	1	583
Region:				
Northeast	70	28	2	639
North Central	75	24	1	664
South	74	24	2	750
West	65	34	1	450
Family income:				
Under $3,000	94	4	2	256
$3,000 to $5,999	88	9	3	367
$6,000 to $9,999	83	15	2	493
$10,000 to $14,999	71	28	1	712
$15,000 and over	41	58	1	605
Community size:				
Metro areas--1 million and over	69	29	2	895
Other metro	66	33	1	730
Nonmetro	78	21	1	878

Question 29a: "Now, we would like to talk about some other foods. What, if anything, would make you think that an unopened can might contain food that would be unsafe to eat?"

Conditions	U.S. total
	Percent
Dented (bent, mashed, mutilated)	55
Bulging (swollen, puffy)	52
Rusty (dark, spots, discolored)	33
Leaking (punctured, broken seams)	19
Label missing (torn, shredded, discolored)	7
Looked old (looked like it was on shelf a long time)	5
Past expiration date, can out-of-date	3
Dirty	1
Other mentions	2
No answer	7
	Number
Cases	2,503

Question 29b: "What, if anything, would make you think once a can was opened that the food inside was unsafe to eat?"

Reasons	U.S. total
	Percent
Odor	70
Color of food, juice	44
Mold, fungus, algae	14
Bubbles; escape of gas; food or juice spewed out	13
Taste	10
Inside of container is discolored	9
Texture of food (lumpy, dry, curdled)	7
Bug or other foreign matter (stems not included)	3
Way it looks	1
Other appearance mentions	1
No answer	5
	Number
Cases	2,503

Question 29c: "Would you probably taste it to determine if it were all right?"

Respondent characteristics	Would not taste it	Would taste it			No answer	Cases
		Total	Gave answer in response to the direct question 29c	Volunteered answer in response to question 29b		
	Percent					Number
U.S. total	68	30	20	10	2	2,503
Education:						
Grade school or less	62	36	26	10	2	413
Some high school	63	35	25	10	2	464
High school graduate	68	30	20	10	2	1,005
Any college	77	22	13	9	1	583
Family income:						
Under $3,000	62	37	24	13	1	256
$3,000 to $5,999	67	30	22	8	3	367
$6,000 to $9,999	65	33	24	9	2	493
$10,000 to $14,000	68	31	21	10	1	712
$15,000 and over	75	23	15	8	2	605
Aware of facts:						
Total	74	24	17	7	2	558
High risk	74	23	16	7	3	321
Low risk	73	26	19	7	1	237
Not aware of facts:						
Total	67	32	22	10	1	1,945
High risk	66	33	22	11	1	1,249
Low risk	68	30	21	9	2	696

Question 29d: "In the past 12 months have you had a can of food in your home, which had been bought in a store, that you suspected might be unsafe to eat?"

Respondent characteristics	Did not suspect any can of food might be unsafe to eat	Suspected a can of food might be unsafe to eat	No answer	Cases
	Percent			Number
U.S. total	76	24	1/	2,503
Age:				
Under 30	75	25	0	537
30 to 49	73	27	0	940
50 to 64	75	24	1	612
65 and over	85	15	0	369
Education:				
Grade school or less	82	17	1	413
Some high school	79	21	1/	464
High school graduate	74	26	0	1,005
Any college	71	29	0	583
Family income:				
Under $3,000	85	15	0	256
$3,000 to $5,999	86	13	1	367
$6,000 to $9,999	72	28	0	493
$10,000 to $14,999	73	27	1/	712
$15,000 and over	71	29	0	605

1/ Less than 0.5 percent.

Question 29e: "What caused you to suspect the can of food might be unsafe to eat?" (Asked only of those respondents who suspected that a can of food, which had been purchased in a store, might be unsafe to eat.)

Reasons	U.S. total
	Percent
Bad odor; terrible odor; rancid, sour	21
Bulging can; puffy, bruised, swollen	19
Color of food; didn't look right	17
Rust on can; black residue on top of can; discoloration	12
Juice spewed out; air escaped	11
Leaking	10
Mold in it; moldy looking	8
Dented	8
Taste; didn't taste right; tasted tinny	7
Texture (gooey, mushy, runny)	5
Bug or other foreign matter in food	3
Other appearance mentions	4
Other mentions	4
	Number
Cases	608

Question 30: "Most meat and poultry are government inspected now. Thinking of the meat you buy--how likely is it to carry harmful bacteria or germs?"

Respondent characteristics	Not at all likely	Not too likely	Somewhat likely	Very likely	No answer	Cases
	Percent					Number
U.S. total	16	47	24	12	1	2,503
Education:						
Grade school or less	18	39	26	14	3	413
Some high school	15	41	32	11	1	464
High school graduate	17	50	21	12	1/	1,005
Any college	12	52	22	13	1	583

1/ Less than 0.5 percent.

Question 31: "Now, I would like to ask you a few questions about foodborne illness . . . . When the phrase 'foodborne illness' is mentioned, what foods, if any, come to your mind?"

Foods	U.S. total
	Percent
Pork	27
Chicken	9
Other meat, poultry	27
Tuna	17
Fish, shellfish (other than tuna)	16
Vegetables, fruit	13
Mushrooms	8
Eggs	5
Milk	4
Other dairy products	2
Egg salad, chicken salad, tuna salad	9
Mayonnaise	6
Cream or custard pies, custards and puddings	4
Soup	3
Other mentions	11
None	8
No answer	10
	Number
Cases	2,503

Question 32: "What foods, if any, have you heard about in connection with occurrences of food poisoning or problems of unsafe foods in this country?"

Foods	U.S. total
	Percent
Tuna fish	44
Mushrooms	32
Soup	16
Cranberries	8
Chicken	7
Vegetables, fruit	6
Pork	6
Potato salad	3
Macaroni and cheese	2
Hamburgers	2
Chicken salad	2
Eggs	2
Other fish, shellfish	14
Other meat, poultry products	10
Other dairy products	2
Other mentions	13
None	9
No answer	7
	Number
Cases	2,503

Question 33: "Now here is something a little different. The idea is to match up a word with the statement that is most closely related to it."

Respondent characteristics	Matched all correctly	Matched incorrectly				Cases
		Salmonella--raw poultry and eggs	Botulism--canned foods	Trichinosis--undercooked pork	Staphylococcus (Staph)--infected cut on hand	
	Percent					Number
U.S. total	50	44	36	35	32	2,503
Age:						
Under 30	48	45	38	35	26	537
30 to 49	56	39	30	30	26	940
50 to 64	52	44	35	36	34	612
65 and over	36	57	48	47	51	369
Education:						
Grade school or less	25	69	60	61	63	413
Some high school	36	56	47	49	41	464
High school graduate	52	42	31	31	27	1,005
Any college	77	20	16	11	9	583
Family income:						
Under $3,000	20	76	63	65	66	256
$3,000 to $5,999	43	49	42	44	41	367
$6,000 to $9,999	46	49	41	39	35	493
$10,000 to $14,999	56	37	30	29	23	712
$15,000 and over	66	30	21	20	18	605
Region:						
Northeast	51	44	35	29	32	639
North Central	55	40	34	31	26	664
South	41	53	44	44	40	750
West	58	34	24	34	27	450
Community size:						
Metro areas--1 million and over	51	43	32	33	33	895
Other metro	54	41	35	32	27	730
Nonmetro	47	48	40	39	35	878
Aware of facts:						
Total	56	38	31	28	27	558
High risk	54	38	33	29	30	321
Low risk	59	37	29	27	24	237
Not aware of facts:						
Total	49	46	37	37	33	1,945
High risk	50	44	35	36	31	1,249
Low risk	45	49	40	38	36	696

Question 34: "In the past 5 years has anyone in this household had any kind of illness or discomfort, no matter how mild, that you or they suspected might have been caused by eating spoiled or unsafe food? Do not include allergies to food."

Respondent characteristics	Did not experience illness	Experienced illness	Cases
	Percent		Number
U.S. total	85	15	2,503
Age:			
Under 30	76	24	537
30 to 49	83	17	940
50 to 64	90	10	612
65 and over	94	6	369
Education:			
Grade school or less	93	7	413
Some high school	86	14	464
High school graduate	85	15	1,005
Any college	78	22	583
Family income:			
Under $3,000	92	8	256
$3,000 to $5,999	93	7	367
$6,000 to $9,999	85	15	493
$10,000 to $14,999	82	18	712
$15,000 and over	81	19	605
Region:			
Northeast	85	15	639
North Central	85	15	664
South	87	13	750
West	81	19	450
Community size:			
Metro areas--1 million and over	84	16	895
Other metro	83	17	730
Nonmetro	88	12	878

Question 35a: "Who in this household experienced this kind of illness or discomfort?" (Asked only of those respondents who said that in the past 5 years one or more household members had experienced illness or discomfort suspected to have been caused by eating spoiled or unsafe food.)

Family member	U.S. total
	Percent
Female	52
Under 35	30
35 to 64	17
65 and older	3
No answer	1
Male	48
Under 35	30
35 to 64	15
65 and older	2
No answer	1
	Number
Cases	494

Question 35b: "What do you think it was that he/she ate that caused this illness or discomfort?" (Asked only of those respondents who said that in the past 5 years one or more household members had experienced illness or discomfort suspected to have been caused by eating spoiled or unsafe food.)

Foods	U.S. total
	Percent
Meat, poultry (hamburger, chicken)	40
Seafood, seafood dish	10
Processed meat (sausages, hotdogs, knockwurst)	10
Dairy products (milk, butter)	7
Mayonnaise based foods (shrimp salad, tuna salad, potato salad, cole slaw, egg salad)	5
Heat and serve TV dinners and entrees	2
Canned or frozen vegetables, fruits	1
Other mentions	26
No answer	7
	Number
Cases	494

Question 35c: "Was that leftover from a previous meal or not?" (Asked only of those respondents who said that in the past 5 years one or more household members had experienced illness or discomfort suspected to have been caused by eating spoiled or unsafe food.)

Response	U.S. total
	Percent
Food suspected of causing illness:	
Was not leftover from previous meal	74
Was leftover from previous meal	13
No answer	13
	Number
Cases	494

Question 35d: "Was the food prepared in the home or outside the home?" (Asked only of those respondents who said that in the past 5 years one or more household members had experienced illness or discomfort suspected to have been caused by eating spoiled or unsafe food.)

Response	U.S. total
	Percent
Food prepared outside the home	49
Food prepared in the home	43
No answer	8
	Number
Cases	494

Question 35e: "To whom, if anyone, outside this household was this illness or discomfort reported?" (Asked only of those respondents who said that in the past 5 years one or more household members had experienced illness or discomfort suspected to have been caused by eating spoiled or unsafe food.)

Person	U.S. total
	Percent
No one	75
Doctor	14
Other mentions	10
No answer	3
	Number
Cases	494

Question 35f: "What were the symptoms?" (Asked only of those respondents who said that in the past 5 years one or more household members had experienced illness or discomfort suspected to have been caused by eating spoiled or unsafe food.)

Symptoms	U.S. total
	Percent
Cramps; stomach pains; severe abdominal pains	61
Diarrhea	44
Vomiting	35
Nauseated feeling	28
Fever; chills; sweating	5
Headache	4
Dizziness	2
Other mentions	6
No answer	1
	Number
Cases	494

Question 36: "Let's suppose you had a cut on your hand while preparing a meal for your family. . . . please tell me your feelings about this cut coming into contact with meat or poultry."

Respondents characteristics	I would be concerned that the meat or poultry would contaminate my cut and that my cut would contaminate the meat or poultry	I would not be concerned about my cut coming in contact with meat or poultry	I would be concerned that my cut would contaminate the meat or poultry	I would be concerned that the meat or poultry would contaminate my cut	No answer	Cases
	Percent					Number
U.S. total	37	32	18	13	1/	2,503
Age:						
Under 30	44	28	19	9	1/	537
30 to 49	37	32	20	11	1/	940
50 to 64	36	30	15	18	1	612
65 and over	34	38	14	13	1	369
Education:						
Grade school or less	32	31	14	22	1	413
Some high school	39	30	18	13	1/	464
High school graduate	40	31	19	10	1/	1,005
Any college	41	33	16	10	1/	583
Region:						
Northeast	36	34	18	12	1/	639
North Central	33	35	17	14	1	664
South	44	24	19	13	1/	750
West	38	36	15	11	1/	450
Aware of facts:						
Total	45	22	22	11	1	558
High risk	46	23	21	9	1	321
Low risk	43	19	22	14	2	237
Not aware of facts:						
Total	36	35	16	13	1/	1,945
High risk	36	34	17	13	1/	1,249
Low risk	36	35	16	13	1/	696

1/ Less than 0.5 percent.

Question 37a: "We would like to know how safe you feel it is to use each of these additives. Would you say that the use of 'vitamin D in milk' is very safe, moderately safe, not too safe, or not safe at all?"

Respondent characteristics	Vitamin D in milk					Cases
	Very safe	Moderately safe	Not too safe	Not at all safe	No opinion	
	Percent					Number
U.S. total	65	23	2	1	9	2,503
Age:						
Under 30	68	24	2	1	5	537
30 to 49	66	24	2	1	7	940
50 to 64	67	21	2	2	8	612
65 and over	55	22	3	2	18	369
Education:						
Grade school or less	59	20	4	2	15	413
Some high school	64	23	2	1	10	464
High school graduate	65	25	2	1	7	1,005
Any college	69	22	2	1	6	583
Region:						
Northeast	62	27	2	1	8	639
North Central	68	22	2	2	6	664
South	66	21	2	1	10	750
West	64	22	2	1	11	450
Family income:						
Under $3,000	51	24	4	3	18	256
$3,000 to $5,999	65	20	3	2	10	367
$6,000 to $9,999	64	22	3	1	10	493
$10,000 to $14,999	68	25	1	1	5	712
$15,000 and over	67	24	2	1	6	605
Community size:						
Metro areas--1 million and over	63	25	3	1	8	895
Other metro	67	22	2	1	8	730
Nonmetro	65	22	2	2	9	878

Question 37b: "We would like to know how safe you feel it is to use each of these additives. Would you say that the use of 'food coloring in meat' is very safe, moderately safe, not too safe, or not safe at all?"

Respondent characteristics	Food coloring in meat					Cases
	Very safe	Moderately safe	Not too safe	Not at all safe	No opinion	
	Percent					Number
U.S. total	16	27	27	23	7	2,503
Age:						
Under 30	12	31	32	21	4	537
30 to 49	19	30	23	23	5	940
50 to 64	16	24	30	22	8	612
65 and over	13	19	29	25	14	369
Education:						
Grade school or less	15	17	28	24	16	413
Some high school	12	24	32	27	5	464
High school graduate	16	29	27	23	5	1,005
Any college	19	32	24	20	5	583
Region:						
Northeast	10	30	26	27	7	639
North Central	15	26	30	24	5	664
South	21	25	29	18	7	750
West	15	29	24	25	7	450
Family income:						
Under $3,000	13	20	31	21	15	256
$3,000 to $5,999	17	24	28	22	9	367
$6,000 to $9,999	15	27	28	25	5	493
$10,000 to $14,999	15	29	27	26	3	712
$15,000 and over	18	30	26	21	5	605
Community size:						
Metro areas--1 million and over	11	27	27	28	7	895
Other metro	21	29	26	20	4	730
Nonmetro	16	25	29	21	9	878

Question 37c: "We would like to know how safe you feel it is to use each of these additives. Would you say that the use of 'saccharin in low calorie soft drinks' is very safe, moderately safe, not too safe, or not at all safe?"

Respondent characteristics	Saccharin in low calorie soft drinks					Cases
	Very safe	Moderately safe	Not too safe	Not at all safe	No opinion	
	Percent					Number
U.S. total	21	38	21	13	7	2,503
Age:						
Under 30	15	43	28	11	3	537
30 to 49	21	38	20	14	7	940
50 to 64	26	35	21	11	7	612
65 and over	25	30	16	14	15	369
Education:						
Grade school or less	27	25	19	15	14	413
Some high school	23	33	24	10	10	464
High school graduate	20	41	20	13	6	1,005
Any college	19	42	22	13	4	583
Region:						
Northeast	12	38	21	19	10	639
North Central	21	40	21	12	6	664
South	30	33	22	8	7	750
West	21	39	22	13	5	450
Family income:						
Under $3,000	25	30	22	8	15	256
$3,000 to $5,999	26	29	22	13	10	367
$6,000 to $9,999	17	41	22	12	8	493
$10,000 to $14,999	19	39	23	14	5	712
$15,000 and over	23	40	19	14	4	605
Community size:						
Metro areas--1 million and over	17	36	23	16	8	895
Other metro	23	36	21	13	7	730
Nonmetro	25	38	21	9	7	878

Question 37d: "We would like to know how safe you feel it is to use each of these additives. Would you say that the use of 'iodine in table salt' is very safe, moderately safe, not too safe, not at all safe?"

Respondent characteristics	Iodine in table salt					Cases
	Very safe	Moderately safe	Not too safe	Not at all safe	No opinion	
	Percent					Number
U.S. total	61	25	7	3	4	2,503
Age:						
Under 30	51	31	9	6	3	537
30 to 49	62	27	6	1	4	940
50 to 64	68	21	4	3	4	612
65 and over	65	19	6	3	7	369
Education:						
Grade school or less	55	23	7	4	11	413
Some high school	61	21	8	6	4	464
High school graduate	60	28	7	2	3	1,005
Any college	64	26	6	2	2	583
Region:						
Northeast	51	31	7	5	6	639
North Central	71	22	2	3	2	664
South	60	24	9	3	4	750
West	62	24	8	1	5	450
Family income:						
Under $3,000	53	24	7	4	12	256
$3,000 to $5,999	59	21	10	5	5	367
$6,000 to $9,999	60	26	7	3	4	493
$10,000 to $14,999	61	27	6	3	3	712
$15,000 and over	61	27	6	2	4	605
Community size:						
Metro areas--1 million and over	54	30	8	3	5	895
Other metro	63	23	6	4	4	730
Nonmetro	66	23	5	2	4	878

Question 37e: "We would like to know how safe you feel it is to use each of these additives. Would you say that the use of 'nitrite used as a preservative in hot dogs' is very safe, moderately safe, not too safe, or not at all safe?"

Respondent characteristics	Nitrite used as a preservative in hot dogs					Cases
	Very safe	Moderately safe	Not too safe	Not at all safe	No opinion	
	Percent					Number
U.S. total	10	25	22	21	22	2,503
Age:						
Under 30	7	28	30	20	15	537
30 to 49	10	31	21	21	17	940
50 to 64	12	23	20	22	23	612
65 and over	10	15	15	20	40	369
Education:						
Grade school or less	11	19	17	18	35	413
Some high school	9	26	22	22	21	464
High school graduate	9	29	24	20	18	1,005
Any college	9	27	22	23	19	583
Region:						
Northeast	8	22	24	26	20	639
North Central	9	28	23	19	21	664
South	12	27	21	15	25	750
West	9	26	20	25	20	450
Family income:						
Under $3,000	11	20	18	15	36	256
$3,000 to $5,999	12	19	19	22	28	367
$6,000 to $9,999	10	28	24	20	18	493
$10,000 to $14,999	10	30	23	21	16	712
$15,000 and over	7	28	22	23	20	605
Community size:						
Metro areas--1 million and over	8	23	24	28	17	895
Other metro	11	29	21	16	23	730
Nonmetro	11	26	21	17	25	878

Question 37f: "We would like to know how safe you feel it is to use each of these additives. Would you say that the use of 'fruit juice fortified with Vitamin C' is very safe, moderately safe, not too safe, or not at all safe?"

Respondent characteristics	Fruit juice fortified with Vitamin C					Cases
	Very safe	Moderately safe	Not too safe	Not at all safe	No opinion	
	Percent					Number
U.S. total	74	20	2	1	3	2,503
Age:						
Under 30	80	17	1	1	1	537
30 to 49	73	23	1	1	2	940
50 to 64	72	20	2	2	4	612
65 and over	69	16	5	3	7	369
Education:						
Grade school or less	69	18	3	3	7	413
Some high school	79	18	1	*	2	464
High school graduate	73	23	1	1	2	1,005
Any college	76	20	2	1	1	583
Region:						
Northeast	70	24	2	1	3	639
North Central	73	20	1	3	3	664
South	79	16	2	*	3	750
West	74	21	2	1	2	450
Family income:						
Under $3,000	65	19	4	2	10	256
$3,000 to $5,999	75	18	3	1	3	367
$6,000 to $9,999	76	19	2	1	2	493
$10,000 to $14,999	75	21	1	2	1	712
$15,000 and over	73	22	1	1	3	605
Community size:						
Metro areas--1 million and over	69	23	2	2	4	895
Other metro	78	18	1	1	2	730
Nonmetro	75	19	2	1	3	878

Question 38a: "Chemicals, additives, preservatives, and colorings often are added to foods. . . . how important do you think it is that such ingredients be printed on the label?"

Respondent characteristics	Very important	Somewhat important	Not too important	Not at all important	No answer	Cases
	Percent					Number
U.S. total	90	7	2	1	1/	2,503
Age:						
Under 30	91	7	1	1	0	537
30 to 49	92	6	1	1	1/	940
50 to 64	90	6	2	2	1/	612
65 and over	81	11	4	3	1	369
Education:						
Grade school or less	83	11	3	2	1	413
Some high school	88	8	3	1	0	464
High school graduate	91	6	1	2	0	1,005
Any college	94	5	1	*	0	583
Family income:						
Under $3,000	80	13	4	3	1/	256
$3,000 to $5,999	87	8	3	2	1/	367
$6,000 to $9,999	89	8	1	2	1/	493
$10,000 to $14,999	93	4	2	1	0	712
$15,000 and over	92	6	1	1	0	605

1/ Less than 0.5 percent.

Question 38b: Reasons for saying it is important that ingredients be printed on labels. (Asked only of those respondents who said it is "very important" or "somewhat important" that ingredients such as chemicals, additives, preservatives, and colorings be printed on the labels.)

Reasons	U.S. total
	Percent
Right to know; consumer should be the judge, have the choice; "want to know what is in the food I buy"	56
Specific medical reasons, restricted diets--allergy, heart disease, high blood pressure, weight watching, etc.	33
Concern that additives, chemicals, preservatives, food colorings are harmful, dangerous, unsafe, cause cancer, not good for you; concern for the health or safety of my family	12
Concern that additives, chemicals, preservatives, food colorings are being used to disguise the . . . quality of food (age, appearance, color); desire for fresh, pure, natural foods; many of these additives, chemicals, preservatives, food colorings are not necessary, serve no purpose, are junk taking up space of real food	10
Other mentions	1
No answer	1
	Number
Cases	2,416

Question 38b: Reasons for saying it is not important that ingredients be printed on labels. (Asked only of those respondents who said it is "not too important" or "not at all important" that ingredients such as chemicals, additives, preservatives, and colorings be printed on the label.)

Response	U.S. total
	Percent
Never read the labels; never bother to check; people never pay attention to labels	21
Don't understand the meaning of the words; chemical words not understood; wouldn't know what it was anyway	18
Manufacturers wouldn't put anything in that is harmful; they wouldn't put in if not safe; trust the manufacturer	11
Miscellaneous	30
No answer	23
	Number
Cases	83

Question 39: "Should the Government require that all ingredients be named on food labels, or should this be voluntary on the part of the food industry?"

Respondent characteristics	Required by goverment	Voluntary by industry	No answer	Cases
	Percent			Number
U.S. total	90	9	1	2,503
Age:				
Under 30	90	9	1	537
30 to 49	93	7	1/	940
50 to 64	89	10	1	612
65 and over	85	12	3	369
Education:				
Grade school or less	85	13	2	413
Some high school	89	10	1	464
High school graduate	92	7	1	1,005
Any college	94	6	0	583
Family income:				
Under $3,000	83	15	2	256
$3,000 to $5,999	89	10	1	367
$6,000 to $9,999	89	10	1	493
$10,000 to $14,999	92	7	1	712
$15,000 and over	93	7	0	605

1/Less than 0.5 percent.

Question 40a: "Which of the types of food listed . . ., if any, do you believe could carry traces of chemicals used to kill insects and other pests?"

Respondent characteristics	Fresh fruits and vegetables	Dried foods such as flour, cereals, rice, etc.	Meat and poultry	Frozen fruits and vegetables	Canned fruits and vegetables	None of these	No answer	Cases
	Percent							Number
U.S. total	88	46	41	32	28	5	1	2,503
Age:								
Under 30	87	49	39	34	37	6	1	537
30 to 49	90	49	43	35	29	4	2	940
50 to 64	91	43	41	31	24	4	1	612
65 and over	79	37	37	24	19	8	3	369
Education:								
Grade school or less	77	32	29	22	18	11	5	413
Some high school	85	48	35	26	22	6	1	464
High school graduate	91	44	41	30	26	4	1	1,005
Any college	94	56	53	48	42	2	0	583
Region:								
Northeast	85	45	39	28	29	4	3	639
North Central	91	50	46	36	28	3	1	664
South	87	38	33	29	25	7	1	750
West	89	53	46	37	32	5	1	450
Family income:								
Under $3,000	76	38	32	26	22	10	5	256
$3,000 to $5,999	83	39	37	27	23	7	2	367
$6,000 to $9,999	87	43	36	31	28	5	1	493
$10,000 to $14,999	89	47	41	31	26	4	1/	712
$15,000 and over	95	54	50	42	37	2	1	605
Community size:								
Metro areas--1 million and over	86	46	41	35	31	5	3	895
Other metro	92	50	44	32	30	2	1	730
Nonmetro	86	42	37	30	23	6	1	878

1/ Less than 0.5 percent.

Question 40b: "If chemicals used to kill insects and other pests are used properly according to Government regulations, would you say the chemicals are very safe, moderately safe, not too safe, or not at all safe?" (Asked only of those respondents who believed that one or more types of food could carry traces of chemicals used to kill insects and other pests.)

Response	U.S. total
	Percent
Very safe	15
Moderately safe	60
Not too safe	16
Not at all safe	6
No opinion	3
	Number
Cases	2,347

Question 41: "Here is a series of statements. I would like you to read each one and tell me if you think the statement 'the food in bulging cans would not be safe to eat' is true, false, or you have no opinion."

Response	U.S. total
	Percent
True	94
False	4
No opinion	2
	Number
Cases	2,503

Question 41: "Here is a series of statements. I would like you to read each one and tell me if you think the statement is true, false, or you have no opinion."

Respondent characteristics	Stuffing should be packed tightly rather than loosely in meat or poultry			Cases
	True	False	No opinion	
	------- Percent --------			Number
U.S. total	25	57	18	2,503
Age:				
Under 30	37	42	21	537
30 to 49	24	58	18	940
50 to 64	21	63	16	612
65 and over	20	65	15	369
Education:				
Grade school or less	29	51	20	413
Some high school	33	49	18	464
High school graduate	25	58	17	1,005
Any college	16	67	17	583
Region:				
Northeast	30	54	16	639
North Central	21	63	16	664
South	27	50	23	750
West	22	63	15	450

Question 41: "Here is a series of statements. I would like you to read each one and tell me if you think the statement is true, false, or you have no opinion."

Respondent characteristics	Freezing of foods will kill any bacteria that may cause illness of food poisoning			Cases
	True	False	No opinion	
	------- Percent --------			Number
U.S. total	20	69	11	2,503
Education:				
Grade school or less	28	50	22	413
Some high school	22	65	13	464
High school graduate	20	70	10	1,005
Any college	13	81	6	583
Family income:				
Under $3,000	32	48	20	256
$3,000 to $5,999	23	64	13	367
$6,000 to $9,999	21	68	11	493
$10,000 to $14,999	21	70	9	712
$15,000 and over	13	77	10	605

Question 41: "Here is a series of statements. I would like you to read each one and tell me if you think the statement is true, false, or you have no opinion."

Respondent characteristics	Meat and poultry if stuffed should be stuffed just before roasting			Cases
	True	False	No opinion	
	------- Percent --------			Number
U.S. total	89	6	5	2,503
Age:				
Under 30	83	10	7	537
30 to 49	90	6	4	940
50 to 64	92	4	4	612
65 and over	91	4	5	369

Question 41: "Here is a series of statements. I would like you to read each one and tell me if you think the statement is true, false, or you have no opinion."

Respondent characteristics	Bacteria in food grow rapidly at room temperature			Cases
	True	False	No Opinion	
	Percent			Number
U.S. total	91	5	4	2,503
Education:				
Grade school or less	85	5	10	413
Some high school	88	7	5	464
High school graduate	93	5	2	1,005
Any college	95	4	1	583
Family income:				
Under $3,000	85	5	10	256
$3,000 to $5,999	88	6	6	367
$6,000 to $9,999	89	7	4	493
$10,000 to $14,999	92	6	2	712
$15,000 and over	96	3	1	605

Question 41: "Here is a series of statements. I would like you to read each one and tell me if you think the statement is true, false, or you have no opinion."

Respondent characteristics	Cooked foods should be left out to cool before being put into the refrigerator			Cases
	True	False	No Opinion	
	Percent			Number
U.S. total	66	31	3	2,503
Age:				
Under 30	65	30	5	537
30 to 49	60	36	4	940
50 to 64	69	30	1	612
65 and over	74	22	4	369
Education:				
Grade school or less	78	18	4	413
Some high school	76	20	4	464
High school graduate	64	33	3	1,005
Any college	49	47	4	583
Family income:				
Under $3,000	77	18	5	256
$3,000 to $5,999	74	22	4	367
$6,000 to $9,999	68	28	4	493
$10,000 to $14,999	64	33	3	712
$15,000 and over	53	43	4	605
Community size:				
Metro areas--1 million and over	64	32	4	895
Other metro	61	35	4	730
Nonmetro	70	27	3	878

Question 41: "Here is a series of statements. I would like you to read each one and tell me if you think the statement is true, false, or you have no opinion."

Respondent characteristics	Frozen meat, fruits and vegetables that are partially thawed . . . can be refrozen and remain safe to eat, though there may be some change in the texture			Cases
	True	False	No Opinion	
	Percent			Number
U.S. total	42	53	5	2,503
Age:				
Under 30	35	60	5	537
30 to 49	43	53	4	940
50 to 64	45	51	4	612
65 and over	49	45	6	369
Education:				
Grade school or less	41	51	8	413
Some high school	39	57	4	464
High school graduate	41	55	4	1,005
Any college	47	49	4	583
Region:				
Northeast	38	56	6	639
North Central	47	49	4	664
South	41	55	4	750
West	44	51	5	450
Community size:				
Metro areas--1 million and over	38	56	6	895
Other metro	41	54	4	730
Nonmetro	48	49	3	878

Question 41: "Here is a series of statements. I would like you to read each one and tell me if you think the statement is true, false, or you have no opinion."

Respondent characteristics	Stuffing can be safely left in meat or poultry if refrigerated			Cases
	True	False	No Opinion	
	Percent			Number
U.S. total	32	60	8	2,503
Education:				
Grade school or less	42	48	10	413
Some high school	38	55	7	464
High school graduate	30	62	8	1,005
Any college	22	71	7	583
Region:				
Northeast	33	59	8	639
North Central	27	66	7	664
South	40	50	10	750
West	22	72	6	450
Family income:				
Under $3,000	47	42	11	256
$3,000 to $5,999	34	58	8	367
$6,000 to $9,999	34	60	6	493
$10,000 to $14,999	29	63	8	712
$15,000 and over	24	69	7	605

Question 41: "Here is a series of statements. I would like you to read each one and tell me if you think the statement is true, false, or you have no opinion."

Respondent characteristics	Refrigeration of perishable foods will completely stop the growth of harmful bacteria			Cases
	True	False	No opinion	
	------- Percent --------			Number
U.S. total	22	69	9	2,503
Age:				
Under 30	18	75	7	537
30 to 49	17	76	7	940
50 to 64	27	66	7	612
65 and over	32	49	19	369
Education:				
Grade school or less	32	47	21	413
Some high school	24	65	11	464
High school graduate	22	71	7	1,005
Any college	13	84	3	583
Family income:				
Under $3,000	30	46	24	256
$3,000 to $5,999	29	59	12	367
$6,000 to $9,999	23	67	10	493
$10,000 to $14,999	19	75	6	712
$15,000 and over	16	80	4	605
Community size:				
Metro areas--1 million and over	25	66	9	895
Other metro	18	75	7	730
Nonmetro	22	68	10	878

Question 42a: "How concerned are you about uncooked meat and poultry standing at room temperature for 2 to 3 hours?"

Respondent characteristics	Very concerned	Somewhat concerned	Not too concerned	Not at all concerned	Cases
	Percent				Number
U.S. total	70	18	9	3	2,503
Age:					
Under 30	66	19	12	3	537
30 to 49	69	20	9	2	940
50 to 64	77	13	7	3	612
65 and over	70	17	8	5	369
Region:					
Northeast	69	19	9	3	639
North Central	68	20	9	3	664
South	79	13	6	2	750
West	62	19	13	6	450
Aware of facts:					
Total	85	12	3	1/	558
High risk	86	10	4	1/	321
Low risk	82	16	2	1/	237
Not aware of facts:					
Total	67	19	10	4	1,945
High risk	64	20	12	4	1,249
Low risk	70	18	8	4	696

1/ Less than 0.5 percent.

Question 42b: Reasons for being concerned about uncooked meat and poultry standing at room temperature. (Asked only of those respondents who said they would be "very concerned" or "somewhat concerned" about uncooked meat and poultry standing at room temperature for 2 to 3 hours.)

Response	U.S. total
	Percent
Will spoil very easily; will spoil at room temperature; unsafe to leave out too long (refrigerate immediately)	53
Bacteria grows rapidly at room temperature; could become sick; it's unhealthy, botulism, food poisoning, salmonella	47
Depends on the temperature in hot season would be very concerned; wouldn't leave out in warm temperature	10
Bugs, flies will get on the meat	3
Color of meat changes (blackens, darkens, discolors, green edges)	3
Bad smell	2
Other	6
No answer	1
	Number
Cases	2,204

Question 42b: Reasons for not being concerned about uncooked meat and poultry standing at room temperature. (Asked only of those respondents who said they would be "not too concerned" or "not at all concerned" about uncooked meat and poultry standing at room temperature for 2 or 3 hours.)

Reasons	U.S. total
	Percent
Don't feel it's harmful	35
Would not spoil in that length of time	31
Would not get bacteria in that length of time	5
Other mentions	17
No answer	14
	Number
Cases	297

Question 43a: "How concerned are you about cooked meat and poultry standing at room temperature for 2 to 3 hours?"

Respondent characteristics	Very concerned	Somewhat concerned	Not too concerned	Not at all concerned	No answer	Cases
	Percent					Number
U.S. total	26	27	36	10	1	2,503
Age:						
Under 30	22	29	39	10	1/	537
30 to 49	26	28	36	9	1	940
50 to 64	28	24	37	11	1/	612
65 and over	29	27	29	14	1	369
Education:						
Grade school or less	28	26	30	15	1	413
Some high school	22	24	42	12	1/	464
High school graduate	26	26	38	9	1	1,005
Any college	29	32	31	7	1	583
Region:						
Northeast	28	28	36	8	0	639
North Central	29	27	35	8	1	664
South	23	24	39	13	1	750
West	25	30	33	12	1/	450
Aware of facts:						
Total	54	46	0	0	1/	558
High risk	51	49	0	0	1/	321
Low risk	57	43	0	0	1/	237
Not aware of facts:						
Total	18	21	47	13	1	1,945
High risk	15	22	48	14	1	1,249
Low risk	24	21	43	11	1	696

1/Less than 0.5 percent.

Question 43b: Reasons for being concerned about cooked meat and poultry standing at room temperature. (Asked only of those respondents who said they would be "very concerned" or "somewhat concerned" about cooked meat and poultry standing at room temperature for 2 to 3 hours.)

Reasons	U.S. total
	Percent
Cooked foods spoil; would spoil in that length of time; refrigerate immediately	47
Not safe because of bacterial growth; bacteria grows fast on cooked foods; too susceptible to bacteria	40
If it is too hot, summer; wouldn't leave it out	9
Bugs, flies will get on meat	3
Cooked meat will dry out; lose its flavor	3
Other mentions	8
No answer	3
	Number
Cases	1,330

Question 43b: Reasons for not being concerned about cooked meat and poultry standing at room temperature. (Asked only of those respondents who said they "would not be too concerned" or "not at all concerned" about cooked meat and poultry standing at room temperature for 2 to 3 hours.)

Reasons	U.S. total
	Percent
Won't spoil in 2-3 hours; won't spoil for hours; not concerned for a few hours; doesn't spoil as fast as uncooked meats; safe for that period of time	55
Cooking kills bacteria, kills the germs, kills all bacteria; bacteria won't grow as fast on cooked meats--because it was killed in cooking	24
Never had a problem--no one's gotten ill	10
Cools the meat before putting in refrigerator; cool at room temperature; cool meat 2-3 hours	7
Would be concerned only in hot weather, summer	4
Leaves the meat covered	3
Other mentions	3
No answer	3
	Number
Cases	1,158

Question 44a: "Now, I would like to talk about convenience foods for a moment . . . . Would you say that you are using more, about the same number, or fewer of these types of products than you used about five years ago?"

Response	U.S. total
	Percent
More	30
Same	30
Fewer	26
Never used	14
	Number
Cases	2,503

Question 44b: "Would you say that convenience dishes or meals are safer, about as safe, or less safe to eat than dishes or meals made from 'scratch'?"

Response	U.S. total
	Percent
As safe	65
Less safe	31
Safer	3
No answer	1
	Number
Cases	2,503

Question 44c: Reasons for convenience dishes or meals being considered less safe than dishes or meals made from scratch. (Asked only of those respondents who said that convenience dishes or meals are less safe.)

Reasons	U.S. total
	Percent
Don't know what was put in the food; whether it was cooked properly	35
Don't know how old they are; how long they've been sitting	23
Has preservatives, additives, chemicals in it	16
Don't know if food was thawed and refrozen	15
Not sanitary--too many hands involved in preparation of foods; don't know how sanitary the conditions are	15
Not as fresh ingredients	12
Other mentions	7
No answer	3
	Number
Cases	765

Question 44c: Reasons for convenience dishes or meals being considered safer than dishes or meals made from scratch. (Asked only of those respondents who said that convenience dishes or meals are safer.)

Reasons	U.S. total
	Percent
Government regulated, government inspected	18
Other mentions	61
No answer	21
	Number
Cases	85

Question 45a: "Consumer information is available from government and industry on how the homemaker could more safely store, handle, and prepare foods. . . . tell me the best ways to get this kind of information to you."

Respondent characteristics	TV spots	Food labels	News-papers	Maga-zines	Publica-tions through the mail	Radio spots	Handouts or displays at retail stores	Demon-strations in retail stores or community workshops	Handouts given to children at school	Other mentions	No answer	Cases
	Percent											Number
U.S. total	59	58	55	48	34	25	19	14	11	3	1	2,503
Age:												
Under 30	59	66	48	51	41	27	25	17	13	2	1/	537
30 to 49	60	61	59	47	34	24	19	14	15	2	1/	940
50 to 64	58	58	55	51	29	21	17	13	6	2	1	612
65 and over	59	43	53	38	31	33	16	13	5	3	2	369
Education:												
Grade school or less	64	44	47	36	27	31	15	10	8	2	1	413
Some high school	63	58	54	43	32	27	22	16	10	1	1	464
High school graduate	57	61	57	50	37	23	18	13	11	2	1/	1,005
Any college	57	66	58	57	34	24	23	16	13	4	0	583
Region:												
Northeast	58	64	62	50	36	28	19	12	14	2	1/	639
North Central	56	59	57	48	35	24	18	12	9	3	1	664
South	64	53	48	43	30	24	15	12	8	3	1/	750
West	58	58	52	51	35	24	29	22	13	2	1	450
Family income:												
Under $3,000	61	44	45	32	31	26	17	12	6	3	3	256
$3,000 to $5,999	59	49	48	41	36	29	17	15	8	2	1	367
$6,000 to $9,999	60	58	52	49	35	28	22	14	10	3	1	493
$10,000 to $14,999	60	62	58	50	36	26	19	14	12	2	1/	712
$15,000 and over	59	66	62	53	31	20	19	14	12	3	0	605
Community size:												
Metro areas--1 million and over	59	62	59	49	34	28	21	15	14	2	1/	895
Other metro	60	61	59	50	35	23	19	14	9	4	1	730
Nonmetro	59	53	46	44	32	25	18	12	9	2	1	878

1/Less than 0.5 percent.

Question 45b: "Consumer information is available from government and industry on how the homemaker could more safely store, handle, and prepare foods. Which is the one best way to get this information to you?"

Respondent characteristics	TV spots	Food labels	News-papers	Maga-zines	Publica-tions through the mail	Radio spots	Handouts or displays at retail stores	Demon-strations in retail stores or community workshops	Handouts given to children at school	Other mentions	No answer	Cases
	Percent											Number
U.S. total	27	24	16	13	10	3	2	2	1	1	1	2,503
Age:												
Under 30	26	28	10	15	12	2	3	1	1	1	1	537
30 to 49	27	21	19	13	10	2	2	2	2	1	1	940
50 to 64	25	27	17	13	9	2	2	2	1/	1	2	612
65 and over	25	19	17	13	11	6	2	2	1	1	3	369
Education:												
Grade school or less	35	18	15	10	11	5	2	1/	1	1	2	413
Some high school	29	24	14	13	8	3	4	2	1	0	2	464
High school graduate	24	24	18	14	11	2	2	2	1	1	1	1,005
Any college	22	25	17	14	10	2	3	2	2	2	1	583
Region:												
Northeast	23	25	19	14	9	3	2	1	2	1	1	639
North Central	23	22	18	12	12	3	2	2	1	2	3	664
South	29	23	14	14	11	2	2	2	1	1	1	750
West	27	24	12	14	10	3	5	2	1	1	1	450
Family income:												
Under $3,000	32	20	12	10	11	7	1	1	1	1	4	256
$3,000 to $5,999	24	22	13	11	16	4	3	3	2	1/	2	367
$6,000 to $9,999	29	24	14	17	8	2	3	1	1/	1	1	493
$10,000 to $14,999	25	23	19	13	11	2	2	2	1	1	1	712
$15,000 and over	24	26	18	13	10	2	3	1	1	1	1	605
Community size:												
Metro areas--1 million and over	25	23	18	14	10	3	3	1	2	1/	1	895
Other metro	24	24	19	12	11	2	3	2	1	1	1	730
Nonmetro	28	23	12	14	11	4	2	2	1	1	2	878

1/Less than 0.5 percent.

Question 46a: "Have you heard on radio any public service ads or programs sponsored by the U.S. Department of Agricultrue about how to handle food safely?"

Response	U.S. total
	Percent
Did not hear on radio	70
Heard on radio	30
	Number
Cases	2,503

Question 46b: "Have you seen on television public service ads or programs sponsored by the U.S. Department of Agriculture about how to handle food safely?"

Response	U.S. total
	Percent
Did not see on television	58
Saw on television	42
	Number
Cases	2,503

Question 52b: Type of refrigerator used.

Type	U.S. total
	Percent
Mechanical refrigerator	93
No answer	7
	Number
Cases	2,503

Question 52c: "About how old would you say your refrigerator is?"

Age	U.S. total
	Percent
2 years or less	23
3 to 4 years	16
5 to 9 years	28
10 years and over	28
No answer	5
	Number
Cases	2,503

Cross tabulations of respondent characteristics

Background information--relationships among characteristics used as standard cross tabulations.1/

Respondent characteristics	Age				Education				Region				Cases
	Under 30	30 to 49	50 to 64	65 and over	Grade school or less	Some high school	High school graduate	Any college	North-east	North Central	South	West	
	Percent												Number
U.S. total	22	38	25	15	17	19	40	23	26	27	29	18	2,503
Age:													
Under 30	100				5	19	48	28	26	25	29	20	537
30 to 49		100			10	18	45	27	26	24	30	20	940
50 to 64			100		26	19	35	19	24	28	31	17	612
65 and over				100	38	20	22	17	23	32	32	13	369
Education:													
Grade school or less	6	22	38	34	100				20	24	42	14	413
Some high school	22	36	25	16		100			25	23	36	16	464
High school graduate	26	42	21	8			100		29	29	24	18	1,005
Any college	25	43	20	11				100	24	26	26	24	583
Region:													
Northeast	22	39	23	13	13	18	47	21	100				639
North Central	21	34	26	18	15	16	44	22		100			664
South	21	37	26	16	23	23	32	21			100		750
West	24	41	23	11	13	16	39	31				100	450
Family income:													
Under $3,000	14	13	23	50	54	20	16	5	19	19	46	16	256
$3,000 to $5,999	22	20	28	29	29	25	32	11	19	26	35	20	367
$6,000 to $9,999	28	37	22	12	16	27	37	19	25	24	31	20	493
$10,000 to $14,999	23	45	24	6	7	17	52	23	29	30	26	15	712
$15,000 and over	19	51	25	4	4	9	44	43	29	27	24	20	605
Community size:													
Metro areas--1 million and over	22	39	25	11	11	18	44	25	41	25	8	26	895
Other metro	22	41	22	14	12	17	43	27	20	26	37	17	730
Nonmetro	20	34	26	20	26	20	33	19	13	29	47	11	878

See footnote at end of table.

Continued

Background information--relationships among characteristics used as standard cross tabulations.1/

Respondent characteristics	Family income					Community size			Cases
	Under $3,000	$5,000 to $5,999	$6,000 to $9,000	$10,000 to $14,999	$15,000 and over	Metro areas--1 million and over	Other metro	Non-metro	
	Percent								Number
U.S. total	10	15	20	28	24	36	29	35	2,503
Age:									
Under 30	7	15	26	30	21	37	30	33	537
30 to 49	4	8	20	34	33	37	32	31	940
50 to 64	10	17	18	27	25	36	27	37	612
65 and over	35	29	15	12	6	26	27	47	369
Education:									
Grade school or less	34	26	19	12	5	25	20	55	413
Some high school	11	19	29	26	11	35	27	38	464
High school graduate	4	12	18	37	27	39	32	29	1,005
Any college	2	7	16	28	44	37	34	29	583
Region:									
Northeast	8	11	20	32	27	59	23	18	639
North Central	7	14	18	33	25	33	29	38	664
South	16	17	20	25	19	9	35	55	750
West	9	16	22	23	27	50	28	22	450
Family income:									
Under $3,000	100					20	26	54	256
$3,000 to $5,999		100				32	22	46	367
$6,000 to $9,999			100			36	27	37	493
$10,000 to $14,999				100		39	31	30	712
$15,000 and over					100	42	34	24	605
Community size:									
Metro areas--1 million and over	6	13	20	31	28	100			895
Other metro	9	11	18	30	28		100		730
Nonmetro	16	19	21	25	17			100	878

1/ Percentages may add to less than 100 because some characteristics were not ascertained for some respondents.

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With the exception of check-box material, office record information, and free-answer space, the questionnaire used for this study is reproduced below in entirety. The cards used are reproduced at the end of the questionnaire. Instructions to interviewers are in upper case letters.

Hello. I am _____ of Crossley Surveys, an independent marketing research company. We are conducting a survey on behalf of the U.S. Department of Agriculture on consumer attitudes toward foods. Are you the person who usually prepares the meals in this household? (IF NO, ASK: May I speak with the person who does?) The U.S. Department of Agriculture is interested in how consumers like yourself fix foods and what you think about foods available today.

1. Have you prepared hamburgers or ground meat patties in the past 12 months? IF "NO" TO QUESTION 1, SKIP TO QUESTION 4a

2. (SHOW CARD A) About how many times in the past 12 months have you prepared hamburgers?

3. The last time you prepared hamburgers, how did you cook them? (READ LIST. CIRCLE ALL THAT APPLY) Rare, Medium-rare, Medium, Well-done

4a. Have you roasted a beef roast in the oven in the past 12 months? We do not mean a pot roast. IF "NO" TO QUESTION 4a, SKIP TO QUESTION 7a

b. (SHOW CARD A) About how many times in the past 12 months have you prepared a beef roast?

5a. The last time you prepared a beef roast, about how soon after you finished cooking it did you serve it?

b. (IF ONE HOUR OR MORE IN QUESTION 5a, ASK:) Where did you keep the beef roast during this time?

6a. The last time you cooked a beef roast, did you have any left over after that first meal? IF "NO" TO QUESTION 6a, SKIP TO QUESTION 7a

b. Where did you put the leftover beef roast this last time? (READ LIST. CIRCLE ALL THAT APPLY) Counter or table, Warm oven or stove top, Refrigerator, Freezer

c. (IF NO MENTION OF "REFRIGERATOR" OR "FREEZER" IN QUESTION 6b, ASK:) About how much time elapsed between the time you first served the beef roast and the time the leftovers were eaten?

d. (IF ANY MENTION OF "REFRIGERATOR" OR "FREEZER" IN QUESTION 6b, ASK:) About how much time elapsed between the time you first served the beef roast and the time you stored the roast in the (REFRIGERATOR/FREEZER)?

e. (IF ANY MENTION OF "REFRIGERATOR" OR "FREEZER" IN QUESTION 6b, ASK:) About how long did you store the leftover roast in the (REFRIGERATOR/FREEZER)? (READ LIST) 1 to 2 days, 3 to 4 days, 5 to 7 days, 8 to 14 days, Over 2 weeks

7a. (ASK ALL) Have you cooked a fresh pork roast in the past 12 months? IF "NO" TO QUESTION 7a, SKIP TO QUESTION 11a

b. (SHOW CARD A) About how many times in the past 12 months have you prepared a fresh pork roast?

8a. How did you cook the fresh pork roast the last time you cooked one? (READ LIST) Rare, Medium-rare, Medium, Well-done

b. (IF "MEDIUM" OR "MEDIUM WELL-DONE" MENTIONED IN QUESTION 8a, ASK:) How were you able to tell when the pork roast was done the way you wanted it? (PROBE: What exactly did you look for?)

9a. The last time you prepared a fresh pork roast, about how soon after you finished cooking it did you serve it?

b. (IF ONE HOUR OR MORE IN QUESTION 9a, ASK:) Where did you keep the pork roast during this time?

10a. The last time you cooked a pork roast did you have any left over after that first meal? IF "NO" TO QUESTION 10a, SKIP TO QUESTION 11a

b. Where did you put the leftover pork roast this last time? (READ LIST. CIRCLE ALL THAT APPLY) Counter or table, Warm oven or stove top, Refrigerator, Freezer

c. (IF NO MENTION OF "REFRIGERATOR" OR "FREEZER" IN QUESTION 10b, ASK:) About how much time elapsed between the time you first served the pork roast and the time the leftovers were eaten?

d. (IF ANY MENTION OF "REFRIGERATOR" OR "FREEZER" IN QUESTION 10b, ASK:) About how much time elapsed between the time you first served the pork roast and the time you stored the leftover roast in the (REFRIGERATOR/FREEZER)?

e. (IF ANY MENTION OF "REFRIGERATOR" OR "FREEZER" IN QUESTION 10b, ASK:) About how long did you store the leftover pork roast in the (REFRIGERATOR/FREEZER)? (READ LIST) 1 to 2 days, 3 to 4 days, 5 to 7 days, 8 to 14 days, Over 2 weeks

11a. (ASK ALL) Have you prepared a whole turkey in the past 12 months. IF "NO" TO QUESTION 11a, SKIP TO QUESTION 19a

b. (SHOW CARD A) About how many times in the past 12 months have you prepared a whole turkey?

12a. Think for a moment about the last whole turkey you cooked. Was the turkey already stuffed when you bought it? IF "YES" TO QUESTION 12a, SKIP TO QUESTION 14a

b. Did you fix a stuffing with it? IF "NO" TO QUESTION 12b, SKIP TO QUESTION 14a

13a. Did you cook the stuffing or dressing inside the turkey or did you cook it in a separate container? IF "SEPARATE CONTAINER ONLY" IN QUESTION 13a, SKIP TO QUESTION 14a.

b. Did you stuff the turkey a day or more in advance or just before roasting?

c. Did you pack the stuffing tightly or loosely?

14a. At about what temperature did you set the oven for the turkey?

b. Did you cook it completely at one time or did you partially cook it and then complete the cooking at a later time?

c. How did you tell when the turkey was done the way you wanted it? (PROBE: What exactly did you look for?)

15. (IF STUFFING COOKED INSIDE THE TURKEY - QUESTION 13a OR "YES" TO QUESTION 12a, ASK:) How did you know when the stuffing was done?

16a. About how soon after you finished cooking the turkey did you serve it?

b. (IF ONE HOUR OR MORE IN QUESTION 16a, ASK:) Where did you keep the turkey during this time?

c. (IF STUFFING COOKED INSIDE THE TURKEY - QUESTION 13a, or "YES" TO QUESTION 12a, ASK:) Did you keep the stuffing the in turkey until you served it?

17a. Was any of the turkey left over after the first meal? IF "NO" TO QUESTION 17a, SKIP TO QUESTION 19a

b. Where did you put the leftover turkey this last time? (READ LIST. CIRCLE ALL THAT APPLY) Counter or table, Warm oven or stove top, Refrigerator, Freezer

c. (IF NO MENTION OF "REFRIGERATOR" OR "FREEZER" IN QUESTION 17b, ASK:) About how much time elapsed between the time you first served the turkey and the time the leftovers were eaten?

d. (IF ANY MENTION OF "REFRIGERATOR" OR "FREEZER" IN QUESTION 17b, ASK) About how much time elapsed between the time you first served the turkey and the time you stored the leftover turkey in the (REFRIGERATOR/FREEZER)?

e. (IF ANY MENTION OF "REFRIGERATOR" OR "FREEZER" IN QUESTION 17b, ASK:) About how long did you store the leftover turkey in the (REFRIGERATOR/FREEZER)? (READ LIST) 1 to 2 days, 3 to 4 days, 5 to 7 days, 8 to 14 days, Over 2 weeks

18a. (IF STUFFING COOKED INSIDE THE TURKEY - QUESTION 13a OR "YES" TO QUESTION 12a, ASK:) Was any of the stuffing or dressing left over after the first meal? IF "NO" TO QUESTION 18a, SKIP TO QUESTION 19a

b. Did you leave the stuffing or dressing inside the turkey or did you remove it and store it separately?

19a. Have you prepared chicken for other than a chicken salad in the past 12 months? IF "NO" TO QUESTION 19a, SKIP TO QUESTION 22a

b. (SHOW CARD A) About how many times in the past 12 months have you prepared chicken for other than a chicken salad?

20a. Think about the last time you cooked chicken for other than a chicken salad. About how soon after you finished cooking this chicken did you serve it?

b. (IF ONE HOUR OR MORE IN QUESTION 20a, ASK:) Where did you keep the chicken during this time?

21a. Was any of the chicken left over after that first meal? IF "NO" TO QUESTION 21a, SKIP TO QUESTION 22a

b. Where did you put the leftover chicken this last time? (READ LIST. CIRCLE ALL THAT APPLY) Counter or table, Warm oven or stove top, Refrigerator, Freezer

c. (IF NO MENTION OF "REFRIGERATOR" OR "FREEZER" IN QUESTION 21b, ASK:) About how much time elapsed between the time you first served the chicken and the time the leftovers were eaten?

d. (IF ANY MENTION OF "REFRIGERATOR" OR "FREEZER" IN QUESTION 21b, ASK:) About how much time elapsed between the time you first served the chicken and the time you stored the leftover chicken in the (REFRIGERATOR/FREEZER)?

e. (IF ANY MENTION OF "REFRIGERATOR" OR "FREEZER" IN QUESTION 21b, ASK:) About how long did you store the leftover chicken in the (REFRIGERATOR/FREEZER)? (READ LIST) 1 to 2 days, 3 to 4 days, 5 to 7 days, 8 to 14 days, Over 2 weeks

22a. When you serve leftover gravy do you cook it so it is... (READ LIST) Warm, Hot but not simmering, Simmering, Boiling

b. (IF "SIMMERING" OR "BOILING" IN QUESTION 22a, ASK:) About how long would you cook it that way?

23a. In the past 12 months have you prepared tuna fish salad, turkey salad, chicken salad or egg salad sandwiches which were taken for work or school lunches? IF "NO" TO QUESTION 23a, SKIP TO QUESTION 25

b. (SHOW CARD A) About how many times in the past 12 months have you prepared salad sandwiches for work or school lunches?

c. What kind did you prepare last?

24a. About how soon after you finished preparing this (TYPE OF SALAD MENTIONED IN QUESTION 23c) salad, was it eaten?

b. Was it refrigerated during any of this time? IF "NO" TO QUESTION 24b, SKIP TO QUESTION 25.

c. For how long was it refrigerated?

25. (HAND RESPONDENT CARD B - READ SLOWLY) People differ in the ways they go about preparing meals. Imagine that you are chopping fresh meat for a stew and vegetables for a fresh salad with the same knife and cutting board. Which one statement on Card B best describes the way you would go about preparing this meal? Just give me the letter next to the statement.

A. After cutting up the fresh meat, I would chop the fresh vegetables and then wash the knife, the cutting board, and my hands with soap and water.

B. After cutting up the fresh meat, I would rinse off the knife, the cutting board, and my hands and then chop the fresh vegetables.

C. After cutting up the fresh meat, I would wash the knife, the cutting board, and my hands with soap and water and then chop the fresh vegetables.

26. Let's suppose you are fixing food for a picnic and you have no way to keep it very hot or very cold once you leave home. You will eat the food about 3 hours after leaving home. (FOR EACH ITEM LISTED, ASK:) Would you avoid fixing (FOOD) because it might become unsafe to eat in 3 hours if not kept very hot or very cold? Fried chicken, Roast beef, Baked ham, Potato salad, Cole slaw, Deviled eggs, Cream or custard pie, Chicken salad, tuna salad, or egg salad sandwiches, Luncheon meats on a platter

27. We would like to know at what temperature homemakers keep their refrigerators. Would you please put this thermometer in your refrigerator now, and at the end of the interview we can check it. Please put it on the middle shelf of the refrigerator - do not put it in the freezer compartment.

28. Do you use a dishwasher in your home?

29a. Now, we would like to talk about some other foods. What, if anything, would make you think that an unopened can might contain food that would be unsafe to eat?

b. What, if anything, would make you think once a can was opened that the food inside was unsafe to eat?

c. (IF TASTE NOT MENTIONED IN QUESTION 29b, ASK:) Would you probably taste it to determine if it were all right?

d. In the past 12 months have you had a can of food in your home, which had been bought in a store, that you suspected might be unsafe to eat? IF "NO" TO QUESTION 29d, SKIP TO QUESTION 30.

e. What caused you to suspect the can of food might be unsafe to eat?

30. (SHOW CARD C) Most meat and poultry are government inspected now. Thinking of the meat you buy - how likely is it to carry harmful bacteria or germs?

31. Now, I would like to ask you a few questions about foodborne illness. By the term "foodborne illness," I mean illness that is caused by eating food that has harmful bacteria or germs on it. When the phrase "foodborne illness" is mentioned, what foods, if any, come to your mind? (DO NOT PROBE)

32. What foods, if any, have you heard about in connection with occurrences of food poisoning or problems of unsafe foods in this country?

33. Now here is something a little different. The idea is to match up a word with the statement that is most closely related to it. Draw a line from the word to its related statement. Do this for each of these words. There is one statement for each word. (HAND PAGE TO RESPONDENT)

1. Trichinosis	A. Canned foods
2. Botulism	B. Infected cuts on the hand
3. Staphylococcus (Staph)	C. Undercooked pork
4. Salmonella	D. Raw poultry and eggs

34. In the past 5 years has anyone in this household had any kind of illness or discomfort, no matter how mild, that you or they suspected might have been caused by eating spoiled or unsafe food? Do not include allergies to food. IF "NO" TO QUESTION 34, SKIP TO QUESTION 36

35a. Who in this household experienced this kind of illness or discomfort? (RECORD BY AGE AND SEX)

b. (FOR EACH MEMBER LISTED IN QUESTION 35a, ASK:) What do you think it was that he/she ate that caused this illness or discomfort?

c. (IF FOOD KNOWN IN QUESTION 35b, ASK:) Was that leftover from a previous meal or not?

d. (IF FOOD KNOWN IN QUESTION 35b, ASK:) Was the food prepared in the home or outside the home?

e. (FOR EACH MEMBER LISTED IN QUESTION 35a, ASK:) To whom, if anyone, outside this household was this illness or discomfort reported?

f. (FOR EACH MEMBER LISTED IN QUESTION 35a, ASK:) What were the symptoms?

36. (SHOW CARD D) Let's suppose you had a cut on your hand while preparing a meal for your family. Using Card D as a guide, please tell me your feelings about this cut coming into contact with meat or poultry. Just tell me the letter beside the statement.

37. (SHOW CARD E) Card E lists some additives which may be added to foods. We would like to know how safe you feel it is to use each of these additives. Would you say that the use of (ITEM) is very safe, moderately safe, not too safe, or not at all safe?

38a. (SHOW CARD F) Chemicals, additives, preservatives, and colorings often are added to foods. Using Card F, how important do you think it is that such ingredients be printed on the label?

b. Why do you say that?

39. Should the Government require that all ingredients be named on food labels, or should this be voluntary on the part of the food industry?

40a. (SHOW CARD G) Which of the types of food listed on Card G, if any, do you believe could carry traces of chemicals used to kill insects and other pests?

b. (IF ANY FOOD TYPE MENTIONED IN QUESTION 40a, ASK:) If chemicals used to kill insects and other pests are used properly according to Government regulations, would you say the chemicals are very safe, moderately safe, not too safe, or not at all safe?

41. (SHOW CARD H) Here is a series of statements. I would like you to reach each one and tell me if you think the statement is true, false, or you have no opinion. (READ SLOWLY) First, statement number one - would you say that it is true or false or have you no opinion? (MENTION EACH STATEMENT BY NUMBER AND GIVE RESPONDENT TIME TO CONSIDER HOW TO ANSWER)

42. (SHOW CARD I) Now I'd like to get your reactions to two questions about handling meat and poultry. Using Card I as a guide...

a. How concerned are you about uncooked meat and poultry standing at room temperature for 2 to 3 hours.

b. Why do you say that?

43a. Again, using Card I as a guide, how concerned are you about cooked meat and poultry standing at room temperature for 2 to 3 hours?

b. Why do you say that?

44. (SHOW CARD J) Now, I would like to talk about convenience foods for a moment. The term "convenience foods" can have different meanings to people. However, by convenience foods we mean foods which are partially or completely prepared so that the homemaker has little or no work to make the desired dish or meal. Card J shows you some examples of different types of convenience foods. (ALLOW RESPONDENT TIME TO LOOK AT CARD J)

a. Would you say that you are using more, about the same number, or fewer of these types of products than you used about five years ago?

b. Would you say that convenience dishes or meals are safer, about as safe, or less safe to eat than dishes or meals made from "scratch?" IF "AS SAFE" IN QUESTION 44b, SKIP TO QUESTION 45a

c. Why do you say that?

45a. (SHOW CARD K) Consumer information is available from government and industry on how the homemaker could more safely store, handle, and prepare foods. Please look at Card K and tell me the best ways to get this kind of information to you. Just tell me the numbers.

b. (IF MORE THAN ONE WAY MENTIONED IN QUESTION 45a, ASK:) Which is the one best way to get this information to you?

46a. Have you heard on radio any public service ads or programs sponsored by the U.S. Department of Agriculture about how to handle food safely?

b. Have you seen on television any public service ads or programs sponsored by the U.S. Department of Agriculture about how to handle food safely?

Thank you. Now, when we put together all the things people have told us, we group together the answers from people who are alike in one or more ways. To know into which groups to put your answers, we need to know something about you and your family.

47a. What is the occupation of the head of this household?

b. In what industry is that?

48. How many persons eating in this household are: Under 18 years of age, 18 years of age and over.

49. What was the last grade you completed in school?

50. How old are you?

51. (SHOW CARD J) For statistical purposes, we need to know which group your household income is in. Please look at this card and tell me the letter that shows your household's total annual income for 1973 before taxes. You should count all kinds of income for every member of the household living here - such as wages, interest, dividends, net income from any business, etc. (IF RESPONDENT REFUSES OR DOESN'T KNOW CHECK THE BOX LABELED REFUSED/DON'T KNOW. THEN ESTIMATE THE INCOME RANGE BY LETTER CODE IN THE SPACE PROVIDED)

52a. Now, can we read the thermometer that we placed in your refrigerator earlier. Please take the thermometer from the refrigerator and hand it to me. (DO NOT ATTEMPT TO LOOK INTO RESPONDENT'S REFRIGERATOR. RECORD EXACT TEMPERATURE)

b. Mechanical refrigerator OR ice box (using block ice).

c. About how old would you say your refrigerator is?

CARDS USED IN THE INTERVIEWS

CARD A

Once a week or more often
2 to 3 times a month
Once a month
5 to 6 times a year
3 to 4 times a year
1 to 2 times a year

CARD B

A. After cutting up the fresh meat, I would chop the fresh vegetables and then wash the knife, the cutting board, and my hands with soap and water.
B. After cutting up the fresh meat, I would rinse off the knife, the cutting board, and my hands and then chop the fresh vegetables.
C. After cutting up the fresh meat, I would wash the knife, the cutting board, and my hands with soap and water and then chop the fresh vegetables.

CARD C

Very likely
Somewhat likely
Not too likely
Not at all likely

CARD D

A. I would be concerned that the meat or poultry would contaminate my cut.
B. I would be concerned that my cut would contaminate the meat or poultry.
C. I would be concerned that the meat or poultry would contaminate my cut and that my cut would contaminate the meat or poultry.
D. I would not be concerned about my cut coming in contact with meat or poultry.

CARD E

1. Vitamin D in milk
2. Food coloring in meat
3. Saccharin in low calorie soft drinks
4. Iodine in table salt
5. Nitrite used as a preservative in hot dogs
6. Fruit juice fortified with Vitamin C

The use would be...

Very safe
Moderately safe
Not too safe
Not at all safe

CARD F

Very important
Somewhat important
Not too important
Not at all important

CARD G

Types of food:

Fresh fruits and vegetables
Frozen fruits and vegetables
Canned fruits and vegetables
Dried foods such as flour, cereals, rice, etc.
Meat and poultry

CARD H

1. Bacteria in food grow rapidly at room temperature.
2. The food in bulging cans would not be safe to eat.
3. Cooked foods should be left out to cool before being put into the refrigerator.
4. Meat and poultry if stuffed should be stuffed just before roasting.
5. Refrigeration of perishable foods will completely stop the growth of harmful bacteria.
6. Stuffing should be packed tightly rather than loosely in meat or poultry.
7. Stuffing can be safely left in meat or poultry if refrigerated.
8. Frozen meat, fruits and vegetables that are partially thawed (still have ice crystals) can be refrozen and remain safe to eat, though there may be some damage to the texture.
9. Freezing of foods will kill any bacteria that may cause illness or food poisoning.

CARD I

Very concerned
Somewhat concerned
Not too concerned
Not at all concerned

CARD J

TV dinners
Heat and serve entrees (such as meat dishes, casseroles, souffles)
Vegetables, prepackaged in cream or butter sauce
Cake and pudding mixes
Dry soup, gravy, sauce mixes
Imitation whipped cream toppings and coffee creamers
Ready-to-eat or ready-to-bake pies, cakes, rolls, waffles

CARD K

1. Magazines
2. Newspapers
3. TV spots
4. Radio spots
5. Handouts or displays at retail stores
6. Demonstrations in retail stores or community workshops
7. Handouts given to children at school
8. Publications through the mail
9. Food labels
10. Other (please indicate)

CARD L

A. Under $3,000
B. $3,000 - $4,999
C. $5,000 - $5,999
D. $6,000 - $6,999
E. $7,000 - $7,999
F. $8,000 - $8,999
G. $9,000 - $9,999
H. $10,000 - $10,999
I. $11,000 - $11,999
J. $12,000 - $12,999
K. $13,000 - $14,999
L. $15,000 and over